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HENRY V. POOR, Editor.

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The *Mechanical Engineering* department of this paper will be under the charge of Mr. ZERAH COLBURN.

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & CO., No. 9 SPRUCE ST.

Saturday, April 15, 1854.

Ohio and Mississippi Railroad.

We wish this company would attune its organs to better harmony. We very modestly echoed a few notes of its hired musician in this city, whereupon the *domestic* organ, edited by a person who has been, and probably is still in the employ of the company, falls upon us and gives us a sound beating, charging us with maligning the company, stating falsehood, etc. etc. This strikes us as rather hard treatment for the offence of merely repeating what the agents of the company furnish to other public prints. It strikes us too, that *hath* organs, if they play at the same time, should blow the same *stop*. The public who are only interested to know the actual condition of the companies affairs, have a right to demand so much.

It is natural the company should desire that the statements made by the *domestic* organ, should correspond with facts that are a matter of common notoriety at home. But these facts are hardly brilliant enough to raise the wind in a foreign market. Consequently a new set are fabricated to meet the new exigency. Of this we do not so much complain; but we repeat, we do think it is hard that an outsider cannot quote either statement

without having his motives and his moral character, directly impugned.

Will the company please let us know whether there is any way of getting around the dilemma in which we are placed, otherwise than by our preserving entire silence?

The Economy of Railroads, as Affected by the Adaptation of Locomotive Power—Addressed to the Railroad Interests of New England.

BY ZERAH COLBURN,
Mechanical Engineer.
(Continued from Page 198.)

RELATION BETWEEN COST AND CHARGE OF TRANSPORTATION.

The cost of transportation can only be fully ascertained until after the construction account of the road in use has been closed.

The cost of carrying may be divided into three distinct elements, leaving out, as will be done in this section, all consideration of the interest on the investment.

The first division of the expenses includes those which are independent of the business done, being controlled by the extent, condition and value of the permanent establishment.

The second division includes expenses which are independent of the physical characteristics of the route.

The third division includes expenses which are partly or wholly contingent upon the grades and curves of the road.

It is with respect, principally, to the latter class of expenditures that I shall suggest the adaptation of motive power.

As there is generally a misapprehension of the real elements of the cost of transportation, and of the effects of grades and curves, I shall enter into a consideration of these subjects.

In the first division are included:

Taxes, insurance, repairs due to the natural decay of the track, roadway, bridges, etc., including *wash* by storms, effects of frosts and thaws, etc.

Repairs of fences, and a large portion of the repairs of buildings.

In the second division are included:

Office and Station expenses,
Agents and Clerks,

Labor in loading and unloading,
Porters, Watchmen and Switchmen,
Maintenance of Ferries and of Telegraph,
All work performed by switching engines, and cars about depots, etc.

All repairs of buildings, and preservation of property contained or used therein, not included in first division.

The principal portion of repairs of all descriptions of cars.

A large part of all other expenses which are influenced by the physical features of the road.

The third division includes all expenses which are due to the increased amount and service of machinery, and increased wear of tracks, consequent upon grades and curves. It includes all extra attendance consequent upon dividing trains to ascend inclines.

To divide these expenses, practically, in the operation of a railroad, and to assign exact proportions to each, would be difficult, if not impossible. Yet reflection can readily discover that such a distinction exists.

The Erie Railroad Company, paid, in the year ending Sept. 30th, 1853, \$735,229 77 for expenses, wholly independent of the features of its line. This sum reached to nearly *one-third* of the whole expenditure, of \$2,407,373 13. Beyond this sum of nearly three-fourths of a million dollars, a large *proportion* of the other expenses were uninfluenced by either grades or curves.

These remarks are made to illustrate the real influence of the physical elements of railroad routes, inasmuch as the term, "cost of transportation," is often used in an indefinite manner, and, beyond a certain limit, is assumed to be in proportion to the total rise and fall of the route over which such transportation is effected.

On the other hand, grades are sometimes disregarded in their effects upon wear of tracks and machinery, and upon extra running expenses. It is from these facts that the subject requires such elucidation as ordinary experience can afford.

The gradients of some of the principal railroad routes may be here stated, to facilitate reference and comparisons.

The New York and Erie Railroad has the following maximum gradients, as stated in the recent report of that company:

Stations.	Distance apart miles.	Distance of latter from Pier- mont Pier. miles.	Grade West. feet.	Grade East. feet.
EASTERN DIVISION.				
Piermont to Blauvelt- ville.....	3.46	4.51	50	—
Blauveltville to Sufferns.....	13.41	17.92	60	59
Sufferns to Chester....	23.22	41.14	60	58
Chester to Otisville....	20.36	61.50	60	56
Otisville to Delaware..	12.69	74.19	—	45
DELAWARE DIVISION.				
Delaware to Deposit...	88.47	162.66	15	—
Deposit to Gulf Summit.....	7.28	168.94	58	—
Gulf Summit to Susquehanna.....	8.24	178.18	—	60
SUSQUEHANNA DIVISION.				
Susquehanna to Corning.....	98.60	276.78	10	5
Corning to Hornellsville.....	40.79	317.57	10	—
WESTERN DIVISION.				
Hornellsville to Almond Summit.....	123 $\frac{3}{4}$	330 $\frac{1}{4}$	50	—
Almond to Andover....	43 $\frac{3}{4}$	335	—	40
Andover to Phillipsville.....	16 $\frac{1}{2}$	351 $\frac{1}{2}$	—	40
Phillipsville to Belvidere.....	3 $\frac{1}{2}$	355	23	—
Belvidere to Cuba Summit.....	8 $\frac{3}{4}$	363 $\frac{3}{4}$	49	—
Cuba to Olean.....	17	380 $\frac{3}{4}$	35	39
Olean to Great Valley.....	16	396 $\frac{3}{8}$	25	15
Great Valley to Dayton Summit.....	25 $\frac{1}{4}$	422	30	40
Dayton Summit to Dunkirk.....	23	445	35	40
The total rise and fall in 445 miles is 8,056 feet, as follows:				
	Ascent West, Descent West,			
	in feet.		in feet.	
Eastern.....	1,625	1,189		
Delaware.....	930	459		
Susquehanna.....	486	244		
Western.....	1,282	1,840		
Total.....	4,323	3,732		
	Sum of both, in feet.	Average per Mile, in feet.		
Eastern.....	2,814	88		
Delaware.....	1,389	13		
Susquehanna.....	780	5		
Western.....	3,123	24		
Total.....	8,056	18		
The elevations of the track are as follows:				
Names of places,	Elevation above tide, in feet.	Distance from New York via U. R. R. in miles.		
Sufferns.....	281.86	32		
Chester.....	455.65	55		
Otisville Summit.....	895.78	75 $\frac{1}{2}$		
Delaware Station.....	436.42	88		
Deposit.....	997.17	176 $\frac{1}{2}$		
Sulf Summit.....	1,366.38	184		
Susquehanna.....	906.88	192		
Owego.....	813.65	236 $\frac{1}{2}$		
Elmira.....	854.32	273		
Corning.....	921.03	290 $\frac{1}{2}$		
Hornellsville.....	1,138.87	331 $\frac{1}{2}$		
Almond Summit.....	1,760.17	344 $\frac{1}{2}$		
Andover.....	1,576.25	349		
Belvidere.....	1,369.88	365 $\frac{1}{2}$		
Cuba Summit.....	1,677.42	377 $\frac{1}{2}$		
Olean.....	1,418.52	394 $\frac{1}{2}$		
Great Valley.....	1,390.58	410 $\frac{1}{2}$		
Summit.....	1,595.58	436		
Dunkirk.....	580.00	459		

The curvature is as follows:

Name of Division.	Whole No. of Degrees.	Average Mile per Deg.
Eastern.....	4,490	60
Delaware.....	9,244	88
Susquehanna.....	4,317	35
Western.....	4,201	32
Total.....	22,252	50
	Curved, in feet.	Straight, in feet.
Eastern.....	138,870	250,530
Delaware.....	296,840	248,622
Susquehanna.....	221,095	512,620
Western.....	193,760	487,051
Total.....	850,555	1,498,728

PENNSYLVANIA CENTRAL RAILROAD.

The Pennsylvania Railroad proper, extending from Harrisburg to Pittsburg, has the following grades:

Stations.	Distance of lat- ter from Harrisburg, miles.	Elevation of lat- ter above Harrisburg, feet.	Max. Grade going East, feet.	Max. Grade going West, feet.
Harrisburg to oppo- site Lewistown.....	60 $\frac{1}{2}$	175	8	16
Opposite Lewistown to Newton or Ham- ilton.....	83 $\frac{1}{2}$	295	—	—
Newton to Peters- burg.....	104	353	10 $\frac{1}{2}$	21
Petersburg to Altoo- na.....	131	851	—	—
Altoon to Sugar Run Summit.....	144	1800	—	92
Summit to 151st mile.....	151	1617	53	—
151st to 159 $\frac{1}{2}$ th mile, 159 $\frac{1}{2}$ th mile to Johns- town.....	173 $\frac{1}{2}$	798	53	—
Johnstown to 195 $\frac{1}{2}$ miles.....	195 $\frac{1}{2}$	634	26 $\frac{1}{2}$	—
195 $\frac{1}{2}$ to 206 miles, Sindorf's Summit, 206 miles.....	206	843	—	26 $\frac{1}{2}$
Sindorf's to crossing of Loyalhanna.....	211	632	53	—
Crossing of Loyal- hanna to Rodger's Summit.....	216	853	—	53
Rodger's to crossing of Sewickly.....	220 $\frac{1}{2}$	668	53	—
Sewickly to Bar- clay's Tunnel.....	223	—	—	53
Barclay's to Turtle Creek.....	241 $\frac{1}{2}$	371	53	—
Turtle to Milligan's Summit.....	245	551	—	47 $\frac{1}{2}$
Milligan's to Liber- ty.....	248 $\frac{1}{2}$	546	—	—
Liberty to Pittsburg, 252 miles.....	252	879	53	—

The canal basin at Harrisburg is 312 feet above tide, and Pittsburg is 699 feet above tide; giving a height of summit equal 2,120 feet at Sugar Run Gap.

Between Harrisburg and Philadelphia, 106 miles, there are maximum grades of 45 feet. Mine Ridge, between Lancaster and Downingtown, is 599 feet above the Delaware; Smith's Summit is 570 feet, and Valley Hill 503 feet, also, above the Delaware.

BALTIMORE AND OHIO ROAD.

I have not been able to procure an accurate profile of that part of the Baltimore and Ohio Railroad east of Cumberland, but have the fol-
lowing memoranda from the report of G.W. Whis-
ter, Jr., on burning anthracite coal.

Baltimore to Harper's Ferry, 80 miles.

8 miles rise from 30 to 40 feet per mile.	
7 " fall " 30 to 40 " "	
2 " rise at 82 feet per mile.	
2 " fall at 82 " "	
40 " rise and fall from 0 to 30 feet per mile.	
15 " level.	
80 miles total length, with a total rise of 852 feet, and fall of 647 feet.	
15 miles are curved with a less radius than 1000 feet. Total curvature, 51 circles of 360°.	
Harper's Ferry to Cumberland, 98 miles.	
14 miles rise from 30 to 40 feet per mile.	
10 " fall " 30 to 40 " "	
33 " rise and fall 0 to 30 " "	
41 " level.	
98 miles total length, with a total rise of 998 feet, and fall of 634 feet.	
1.6 miles are curved with a less radius than 1000 feet. Total curvature, 29 circles of 360°.	
Cumberland to Wheeling, 200 miles.	
Cumberland is 639 feet above mean tide at Bal- timore.	

Stations.	Distance of lat- ter from Cumberland, miles.	Elevation of lat- ter above mean tide, feet.	Maximum Grade going East, feet.	Maximum Grade going West, feet.
Cumberland to 29th mile, near Pied- mont.....	29	—	—	26 $\frac{1}{2}$
20th mile to Swanton.....	40 $\frac{1}{2}$	2272	—	116
Swanton to Al- tamont.....	44	2620	—	106
Altamont to 48 $\frac{1}{2}$ miles.....	48	2414	53	—
48 miles to You- ghio gheny River.....	54	2376	—	—
Youghio gheny to Cranberry Summit.....	63 $\frac{1}{3}$	2550	40	53
Cranberry to Cheat River. 75 $\frac{1}{2}$ miles.....	75 $\frac{1}{2}$	1397	116	—
Cheat River to Cassidy's Summit.....	80	1856	—	106
Cassidy's to East end of King- wood Tunnel, 82 $\frac{1}{2}$ miles.....	82 $\frac{1}{2}$	1820	53	—
Kingwood to Raccoon.....	88 $\frac{1}{2}$	1227	106	—
Raccoon to 91 $\frac{1}{2}$ miles.....	91 $\frac{1}{2}$	1107	40	—
91 $\frac{1}{2}$ to 148 $\frac{3}{4}$ miles.....	148 $\frac{3}{4}$	1042	26 $\frac{1}{2}$	26 $\frac{1}{2}$
148 $\frac{3}{4}$ miles to Glover's Gap. 151 miles.....	151	1150	—	80
Glover's Gap to 159 miles.....	159	925	53	—
159 miles to Board Tree Tunnel.....	162	1102	—	80
Board Tree to 156 $\frac{3}{4}$ miles.....	156 $\frac{3}{4}$	885	80	—
156 $\frac{3}{4}$ miles to Welling's Tun- nel.....	170 $\frac{3}{4}$	1167	—	80
Welling's to 175 $\frac{1}{2}$ miles.....	175 $\frac{1}{2}$	978	80	—
175 $\frac{1}{2}$ miles to Ohio River.....	189 $\frac{1}{2}$	631	40	—
To Wheeling.....	200	629	—	—

Low water at Wheeling, 592 feet above mean
tide at Baltimore; high water 637 feet above.



The grades of the Pennsylvania Central, and of the Baltimore and Ohio road west of Cumberland, are taken from profiles published by the Engineers of the respective companies.

The Reading Railroad has no ascending grades going from the coal region to the Delaware River, except a single 40 feet grade for a short distance near Philadelphia. The maximum grades going from tide water, are 19 feet per mile. Mount Carbon is 607 ft. above high tide in the Delaware River.

WESTERN RAILROAD.

The Boston and Worcester and Western Railroads, of Massachusetts, have the following grades and elevations:

Stations.	Distance of lat- ter from Boston. miles.	Elevation of lat- ter above Base line of Road in Boston. feet.	M a x i m u m Grade going East feet.	M a x i m u m Grade going West. feet.
Boston to 17th mile.....	17		—	30
17th mile to Worcester Summit....	43	50½	30	30
Summit to Wor- cester Station	44	477	30	
Worcester to Charlton Summit.....	57¼	907	—	49
Charlton to 64th mile.....	64	—	50	—
64th to 74th mile.....	74	—	26	5
74th to 95¼ miles.....	95¼	—	43	33
95¼ to Spring- field.....	98½	71	60	—
Springfield to 125¼ miles..	125¼	—	—	36
125¼ miles to Washington Summit....	138½	1456½	—	83
Summit to Pitts- field.....	150½	—	74	15
Pittsfield to State line....	161¾	916	44	45
State Line to Canaan Sum- mit.....	164½	954½	—	20
Canaan to Greenbush opposite Al- bany.....	200	26½	40	35

The shortest curves upon the Western road, respectively, of 955 and 882 feet radius, are in a grade descending to the Eastward at the rate of 25 feet per mile.

The Western Railroad has an unusual amount of rise and fall, in proportion to its length. The whole rise and fall, between Worcester and Greenbush is 3,767 feet. Of the entire length of the road, 22,924 miles, or 15 per cent. are on grades of between 50 and 83 feet rise per mile; while 88,365 miles, or 67 per cent. are inclined above 30 feet per mile. There is a continuous grade of 74 feet per mile, for 5¾ miles; one of 79 feet for 4½ miles; and one of 83 feet for 1½ miles.

VERMONT CENTRAL RAILROAD.

The summit of this road, approached on either side by 50 feet grades, is 46¾ miles from the Connecticut River at White River junction, 56¼ from Lake Champlain; 678 feet above the surface of the Connecticut River, and 913 feet above the lake. Another summit 7¼ miles from, and 252 feet above the lake, requires a 40 feet grade to

ascend from the East, and one of 50 feet in going from the lake.

Between White River Junction and Burlington, a distance of 102, 84-100 miles, the grades are as follows:

Level.....	40.54 miles.
5 to 20 feet rise,	19.81 "
20 " 30 "	15.93 "
30 " 40 "	12.01 "
40 " 50 "	14.55 "

Total.....102.84 "

The Vermont Central Road extends about 15 miles below White River Junction, making the whole road 118 miles long.

RUTLAND AND BURLINGTON RAILROAD.

The summit of this road, between the Connecticut River and Lake Champlain, is at Mount Holly, 85 miles from Burlington and 35 miles from Bellow's Falls. On the Eastern side, the grades are nominally 60 feet per mile, although the late president of the road, Wm. Raymond Lee, Esq., has informed me that he has detected, by instrumental observation, grades of 77 feet rise, near Mount Holly summit. Grades of from 30 to 60 feet occur on other parts of the road.

Assuming the track at Burlington to be 25 feet above the standard or base line of the road, the principal elevations are as follows:

Distance from Burlington, miles.	Elevation. feet.
Burlington.....	0 25
Vergennes.....	22 100
New Haven.....	27 220
Middlebury.....	35 250
Rutland.....	67 430
Cuttingsville.....	77 900
Mount Holly Summit.....	85 1240
Ludlow.....	92 900
Chester.....	106 460
Bellows Falls.....	120 180

Total rise, from Burlington track to Summit, 1,315 feet; fall from summit to Bellow's Falls, 1,160 feet.

EFFECTS OF "GRADES."

Inclines, or "Grades," as they are usually called, involve the resistance of gravity. The locomotive, which, upon a level has only to overcome the friction of the train, has to overcome its weight, or to lift it, to an extent, on a grade. The gravity of the load is in the same proportion to the whole weight as the height of the grade is to its length.

The consideration of grades requires that their relative resistance be determined, for although the absolute resistance of any incline, is always the same, it may be relatively greater or less in proportion to the total resistances of friction, gravity, concussion and atmosphere encountered in passing it. If the power of one pound could move one thousand pounds on a level road, a grade of about 5¼ feet rise in a mile, would double the resistance. But if one pound could pull but ten pounds on a level it would require a grade of 528 feet rise per mile to double the resistance.

Hence, to consider the effect of grades, the nature and amount of other resistances must be considered also.

First, is the friction of the wheels and axles of the carriages, constant at all velocities, but depending upon the condition as well as the weight of carriages. This friction has been found to be as low as six pounds per ton in some cases, while it might, in another case, be as much as 20 pounds

per ton, if the trucks were not well fitted. An average allowance of about 8 lbs. for each ton of 2,240 lbs. is usually made, for this resistance, by engineers.

Second, is the concussion of the flanges of the wheels against the sides and at the ends of the rails. This resistance depends upon the straightness, evenness, and continuity of the tracks. It is increased by "bad joints," by curves, and by inequalities in the grade of the line. It is believed, also, to be exactly in proportion to the speed. On a good road it has been estimated to be 3½ lbs. per ton of 2,240 lbs., at a speed of 10 miles per hour.

Third, the atmosphere offers a resistance which is believed to be nearly in proportion to the "frontage," or opposing surface, and to increase as the square of the velocity. With the usual frontage of 80 square feet, it is believed to be one-fifth of a pound for an entire train, at one mile per hour.

These allowances can be considered only as approximations for general purposes, on account of the uncertainty of the conditions upon which they are established. But they extend far enough to show approximately the resistance of a train of 100 tons, at 12 miles per hour, to be 12¼ lbs. per ton; and of another train, of 50 tons, at 35 miles an hour, to be 24½ lbs. per ton, or exactly double what it is in the first case supposed. With the slow train the resistances are such that a grade of 28.8 feet rise per mile would involve twice the resistance, requiring twice the power to maintain the given speed. With the fast train, however, the resistance would be doubled only upon a grade 57.6 feet rise per mile.

If 10 pounds be assumed as the average resistance of a ton of 2,000 pounds, at a speed of 10 miles per hour on a level, then each ton (2,000 lbs.) of adhesive weight upon the driving wheels of the locomotive would pull as follows, on different grades; the adhesion of the drivers being estimated at one-fifth of the weight. The gravity of the adhesive weight, and of an equal amount for the other weight of the engine and of the tender is deducted, so that the numbers represent the weight of cars and load drawn.

Level.....	39 tons.
26.4 feet rise.....	18½ "
52.8 "	11 6-10 "
79.2 "	8¼ "
105.6 "	6 2-10 "

The gravity of a ton upon any grade is ascertained by multiplying, for a ton of 2,000 lbs., the rise in feet per mile by .3787. For a ton of 2,240 lbs., multiply the rise in feet by .4242.

Thus, an engine having twenty tons on its driving wheels should, if properly proportioned and in good order, draw—

On a level.....	780 tons.
26.4 feet rise.....	370 "
52.8 "	232 "
79.2 "	165 "
105.6 "	124 "

I have taken grades of 26.4 feet rise, and their resultant products, for illustrations, because the first grade involves double the resistance of a level; the next, three times the resistance, and so on, although an engine would not draw so much as one half on a 26.4 feet rise as it would on a level, from the fact that its own gravity has to be deducted on the incline.

We have, thus, proceeded far enough to find

that, with freight trains running over a good road, at low velocities, the *relative resistance* of grades is very great. A low velocity has been made a condition, and it has also been assumed that the engines are loaded up to their ordinary capacity, both of which conditions are necessary for economical transportation.

It is especially with reference to the "capacity of motive power" that I shall hereafter consider the economical working of grades.

Curves impose a resistance to locomotion, but one that is not susceptible of exact estimation, as in the case of grades. Their resistance depends not only upon their radii, but upon the length of train, character of material of wheels, lateral play of journals, lateral play of wheel flanges, length of cars and of trucks, and especially upon the speed of trains passing through. In the latter respect, the relative position of curves to grades is important to be known, as the occurrence of a bad curve—especially a reversed curve—in a steep grade might require an extravagant expenditure of power in one direction, and be dangerous in the other. A sharp curve at the foot of a steep grade is especially dangerous to descending trains.

In Gillespie's work on Roads, it is stated that upon the Utica and Schenectady road, an ascent of 20 feet per mile is followed by a level curve of 700 feet radius; and that trains ascending the incline at 15 miles per hour, *increase* their speed on the curve; showing a curve of 700 feet radius, at 15 miles per hour, to involve less resistance than a grade of 20 feet per mile.

If it be possible to group the principal rise and fall of a road into a short distance, to be worked by assistant power, there remains an excuse for light engines. The New York and Erie road has a length of 243 miles with no grades exceeding 15 feet per mile in either direction, except for 15 miles, where the rise and fall is at the rate of about 60 feet per mile. There are few roads, however, built over a primary geological formation, which possess such favorable features for so great a distance. The Baltimore and Ohio road, which presents the boldest examples of "grouped gradients," has plenty more of undulating, diffused over its length. The Western road, although it has its grades of above 60 feet grouped in about twenty miles, has grades of 40, 45, 50, 55 and 60 feet in many other places—grades which absorb from two-thirds to three-fourths of the power of the engines. But yet, whilst the grades against the Western business are 57 per cent. steeper on the Baltimore and Ohio than on the Western road, the engines of the former road are adapted to draw as heavy a train as are taken over the 74 feet grades of the Western road. This fact, which will receive further elaboration, is one of the most successful examples of the economical working of grades.

The practical effects of working an undulating line are a division of trains on the grades, thereby requiring more engines, enginemen, and firemen; more conductors and brakemen; more fuel, oil, and waste; producing more wear of tracks and road bed; requiring, for a larger number of engines, additional sidings, engine houses, turn-tables, and a greater length of double track. Frequent trains, running nearly upon the same hours, are also much more subject to accidents. Again,

the undulation of the line may be so much diffused over its extent as to prevent even the advantage of running full trains on comparatively level portions of the road. In such a case as this, especially, should the motive power be of the most efficient character. Two or three ruling grades of from 40 to 50 feet per mile, distributed over a distance of from 50 to 100 miles, will, if the business be not heavy enough to pay the expense of assistant power, limit the trains to one-third the capacity of the engines. The Eastern and Western divisions of the Erie Railroad are cases in point. The former has grades of sixty feet, distributed over its length of 74 miles; the latter has grades of from forty to fifty feet, in regular succession for 128 miles. The engines used on these divisions are no heavier than on the other more level divisions, and the usual trains are therefore from one-third to one-fourth only of a proper load on a level.

Now, if the engines in use on the Eastern and Western divisions were more powerful than the others, in proportion to the increased resistances they have to encounter, the same trains which could be drawn by one ordinary engine on a level, could be taken by such enlarged engines over the grades.

It is the amount and nature of the business of a road, and the manner in which the movement is performed, whether by maximum or minimum trains, that affect the relation between *cost* and *charge* of transportation.

The *charge* for transportation is at present as follows, on different railroads:—

To be continued.

For the American Railroad Journal.

To Railroad Companies on Track-Laying.

Among the various railroad improvements brought to notice from time to time, we find many very meritable ones; yet but little attention has been given to track-laying, as no other alterations of material benefit have been made since the first introduction of the T rail into this country, with the exception of a little more care in keeping the ties adjusted together, with some trivial alterations in the chairs and spikes. Other experiments have, however, been made in England and France, and to some extent in this country, such as laying and adjusting ties on stone blocks; and, in some instances, stone have entirely been substituted for the wooden tie. But owing to the immediate and almost entire destruction of both rails and machinery, the latter have, though at the enormous sacrifice of their original cost, been *wholly* abandoned, and wooden ties again resorted to. This we understand is owing entirely to the unyielding solidity of stone, or for the want of a certain temporary elasticity produced in the gravel-bed, by the wooden tie settling away when the train passes; though, from our knowledge of gravel, we are inclined to think that, when once pressed away, it becomes as compact and unyielding on its surface as solid rock, and consequently, after the passing over of a few laden trains, the elastic difference remaining is only the contrast between the nature of stone and wood—the latter not causing the destructive trembling jar attendant upon the former.

Yet, we ask if it is not natural to suppose that ties settle away very unevenly, causing the rail to bend and cramp, draw its chairs and spikes, get

out of adjustment, and go to destruction before half the actual service is realized, in spite of all the labor and enormous annual expense to keep the same in order. Yet this destructive unevenness is accurately manifested only on the application of the weight of a locomotive, or a heavy laden car, which may be readily perceived by the continual lateral wavering of a train in motion, rendering safety entirely out of question at a speed of more than twenty-five miles to the hour.

Again, cars and machinery are constructed necessarily with great accuracy, and calculated only for a track as near to a spirit level as may be; and how is the rapid depreciation of these vehicles accounted for, other than by the liabilities attendant upon the short cramps caused by the uneven yielding of the ties, and the state of the joints of rails occurring every twenty feet?

There is hardly a track in this country on which a locomotive, when running at the rate of thirty miles per hour, will not sway so as to lay all her weight first upon one side then the other at every twenty feet, which it is reasonable to suppose must be occasioned by non-adjustment, and consequently very destructive to all materials.

All this is conscientiously deemed by railroad companies to be a matter of course, expense—and the consequence is, unless a road is doing an enormous business, stocks are found far below par. The major portion of the first cost of a railroad is the rails and equipage, and the contingent expenses thereof is principally confined to the same; and economy therein should be the chief study of those interested. But this, we find, is very much if not entirely neglected under the present imperfect discipline of roads in this country.

In regard to some of the more recently suggested improvements in track laying which has led to these considerations, and which opens a field for investigation, we find that; *first*, elasticity to the tracks of railroads is as indispensable in the vital interests of everything contained in the premises as steam itself. *Secondly*, that a permanent and a spirit level foundation, and beyond the reach of frost, is also indispensable; and, *thirdly*, that a far heavier rail is, or will be, in the end, found more safe, cheap and durable than those now in use, and that, in our opinion, there is none but the endless rail, that is safe under a train at high speed. We have recently investigated an improvement in the continuous rail, by Chuncy Vibbard, superintendent of the New York Central Railroad, which is said, by practical men, to be superior to and rail now in use, and it is said, a portion of the track of the above road is to be laid with the same the coming season. We have also seen some, though rather inaccurate, descriptions of a rubber improvement by some one, intended to be applied between the rail and the foundation in order to give the entire track a uniform elasticity. This plan would require about 720 lbs. of rubber to the mile to give the rail a sufficient yielding to break the shock consequent upon stone or wood foundations. The rubber being so confined in metal caps as to obviate friction or change of shape or elasticity, making it practically safe and permanent whenever it may be laid. We invite the attention of railroad companies to a thorough investigation of some of these devices, and, in fact, to the whole subject, as we deem it one in

which they have deep interests involved, both as corporations and as private individuals. It cannot be denied that the greatest drawback upon our railways as paying investments, results from the rapid depreciation of stock, and any suggestions tending to relieve them from this incubus, should be carefully heeded. B.

Locomotive "Governor Williamson."

(The following article was intended to have accompanied a drawing of the above engine, which appeared in last paper, but was accidentally omitted. We now invite attention both to the article and to the drawing:)

LOCOMOTIVE "GOV. WILLIAMSON."

Early in July last we noticed the advent of a locomotive, of superior design and finish, upon the New Jersey Railroad. This engine was built by Messrs. Danforth, Cooke & Co., of Paterson, N. J. We are now enabled to present our readers with the fine lithographic drawing which accompanies our present issue, showing the exterior appearance of this engine. This drawing is from the establishment of Messrs. Bien and Sterner, 90 Fulton street.

The Locomotive "Gov. Williamson," is one of the new series of heavy express engines, now adopted by the New Jersey Railroad, for running the Philadelphia trains. In all the additions which have been made to the motive power of this road, during the last three years, it has been a settled purpose to secure the highest possible efficiency, durability and beauty. As an example of each and all of these qualities, the "Gov. Williamson" is a rare combination.

There have been but few engines made in this country which have received more liberal proportions of heating surface and boiler room than the subject under our notice. For a 15 inch cylinder, 20 inch stroke, and 6 feet driving wheel, this engine has a boiler 45 inches in diameter in the waist, and containing 129 two inch tubes, 11 feet, 6 inches long. The steam room, obtained by these dimensions of boiler shell is increased by the elevated crown of the firebox, and the two steam domes. The furnace is 4 feet 2 inches long on the grate, 3 feet 4 inches wide, and 4 feet 6 inches deep. This gives about 777 square feet of tube surface, 78½ square feet of interior firebox surface, and 18¾ square feet of grate area.

The steam pipes, ports, etc., are of ample size, the latter being for induction 14 by 1¼ inches, and for eduction, 14 by 2½ inches.

For durability every reasonable requisite is attained both in the quality and in the finish and mode of connection of the material. It is pleasing to notice such secure and substantial frames, spring-suspensions, trucks, rockers, valve motions, boiler braces and stays, etc., as the Paterson engines afford, and especially gratifying to see such examples of locomotive construction so well appreciated and patronized in these times, when orders are so likely to be influenced by the sole consideration of price.

In beauty of form and elegance of proportion, the engraving speaks for itself. In color, polish and decoration the engine is in keeping with the other qualities which we have designated.

Messrs. Danforth, Cooke, & Co., commenced the erection of capacious Locomotive shops in August 1852, and completed and delivered their

first locomotive on the 17th of March, 1853. Since that time 30 engines have been turned out.

Of this number of engines, 9 were inside connected, or "crank" engines, built mostly for the Erie Road, and 21 were outside connected. Seven of these engines are running on the New Jersey, Camden and Amboy, and Morris and Essex Roads, and seven upon the New York and Erie road.

Among the recent productions of this firm we notice a very fine engine, the "Poughkeepsie," upon the Hudson River road. This engine bears every evidence of the progress of improvement in locomotive building; having level cylinders, trucks with outside and inside journals, etc. We notice one detail of this engine which, although simple, is of much value. The bridge which encircles the main valve is forged solid with the valve spindle, the latter being coupled, just outside of the stuffing box, to the valve rod, by a key-socket. This prevents the "stripping of the thread" of the valve stem, which often gives so much annoyance in running. We believe Mr. Harvey Rice, of the Erie road, first adopted this improvement in the engines designed by him and built by Mess. Danforth & Co.

Mr. John Cooke, the superintendent and engineer of these works formerly occupied a like post in the large establishment of Messrs. Rogers Ketchum & Grosvenor.

The tools and machinery of these shops being of the best kind, and the experience of the proprietors being ample, we believe they will continue to sustain a high reputation for the manufacture of Locomotives.

The War in Europe.

The unwillingness manifested by Great Britain to involve herself in a war with Russia, is undoubtedly owing to the recollection of what previous wars have cost her. Her immense national debt of over £800,000,000, or about \$4,000,000,000, has been created almost entirely by foreign wars, waged chiefly on the continent of Europe, to maintain a certain status, similar to what she now seeks to maintain in the case of Turkey, in seeking to redress some imaginary wrong or affront, or in asserting some prescriptive or assumed right. It is now seen that in most of these wars she drove a losing bargain, no matter what the apparent immediate success; that wars settle nothing; that force is not principle, and that the moment the pressure ceases to be applied, the result of all the previous labor goes with it.

The national debt of England is of recent origin. In 1702 it was only £16,000,000. It did not increase materially till the breaking out of the Revolutionary war of this country in 1775. It was not till the commencement of the wars growing out of the French Revolution that it began to roll up at a fearful rate. In 23 years, commencing in 1794 and ending in 1817, the amount of debt created by loans equalled £770,000,000, or nearly £32,000,000 per annum, or about \$160,000,000 of our currency! In the years 1814, 15, and 16, the annual amount added to the national debt was £93,000,000, or £465,000,000, or \$1,395,000,000 in three years! Yet this was at a period in which England was poor compared with her present wealth. At that period her vast manufacturing interest was in its very infancy. Steam had begun to be applied only to a few branches of her national industry. Her production of iron was not one-

twentieth its present amount. The whole production of pig iron in the United Kingdom, in 1796, was only 124,879 tons. The increase of her manufactures in cotton, may be measured by the increased production of the raw material in the United States. A steam marine did not even exist in the idea. Railroads were even unthought of. The wealth of England has increased in a greater ratio, probably, than have the various branches of her national industry. Compare her increase of strength for the past forty years, with all the new elements of power and wealth which that period has evolved, and it will then be seen what a tremendous force she is now capable of exerting.

But her increased strength has not whetted her appetite for war. She is more disinclined than ever to use it for such purpose. *Cui bono?* is the question now asked of every new proposition. She takes counsel from her interests, not her passions. The few millions now asked for are grudgingly and hesitatingly voted. In 1796 a loan of £18,000,000, or \$90,000,000, was subscribed in sixteen hours, to put down Republicanism in France! and \$360,000,000 a year for several years in succession were freely voted for the same object.

How different the prevailing sentiment now! The bad blood between the two countries seems to have been all shed in the terrific wars that have been waged between them. They are now united in the closest bonds of commercial affinity, and both claim to have similar objects of ambition, as far as the political relations of Europe are concerned. The two countries undoubtedly feel, that it is in the pursuits of peace that they can realize their greatest achievements. Such certainly is the conviction of the people of England. Fifty years ago no European nation had outgrown the idea that the use of wealth was the power it gave to attack and oppress neighboring and rival states. During this period wealth has acquired a new value and significance. It now represents railroads, steamships, enormous industrial establishments, employing, and clothing, and feeding whole communities. It is now looked upon as the great conservator of the peace of society instead of furnishing the means for disturbing it. The richest nations are now the most pacific. The Emperor Nicholas undoubtedly presumed a great deal upon the unwillingness of England to submit to the immense sacrifice which a war must cause.

Some two months since, and before an English soldier had left its shores, one of the leading English journals estimated that the fear of a war had cost that country more than \$100,000,000 in the paralysis that it had caused upon all the operations of business and trade. Russia, on the other hand, is the freebooter, all of whose property is on his back, and who can lose little, while he hopes to gain a great deal by disturbing the peace of society.

The present rate of interest paid on the funded debt is only 3 and 3½ per cent. A much larger rate, however, was originally paid. In 1692 the Government offered 8 to 10 per cent. for a loan of £1,000,000, yet could obtain only three-fourths the amount required. Most of the early loans were negotiated at high rates of interest. Subsequently, the practice was, when a loan of £10,000,000 was called for, to issue stock to the lenders to the amount of £12,000,000, or £13,000,000—the

excess being in the nature of a premium—so that, although the stock bore only 4 per cent. interest, a much larger rate was actually paid. Our railroad companies can thus refer to an illustrious authority for selling their securities under par.—These, too, in turn, could set the English people a still better example, of applying the money borrowed to a good use, instead of firing it away in gunpowder, injuring themselves as much as their enemies. It would be difficult to point to any really useful monument (laying 'glory' aside) that the national debt of England has erected.

United States Mint.

The following table will show the coinage at the Mint of the United States, Philadelphia, for the three months of 1854:

	Jan. & Feb.	March.	Total.
Double Eagles, \$6,222,940	\$2,260,260		\$8,483,200
Eagles.....	240,120		240,120
Half-Eagles.....	245,735		245,735
Quarter Eagles	81,580	204,955	286,535
Dollars.....	55,808	182,814	238,622

Total Gold...	\$6,360,328	\$3,133,884	\$9,494,212
Half Dollars...	341,000	116,000	457,000
Quarters.....	609,000	566,000	1,175,000
Dimes.....	117,000	18,000	135,000

Total Silver,...	\$1,067,000	\$700,000	\$1,767,000
Copper.....	3,024	6,738	9,762
Gold, Silver and Copper	\$7,430,352	\$3,840,622	\$11,270,974
Gold Bars....	368,883	626,000	994,883

Total.....	\$7,799,335	\$4,466,622	\$12,265,957
In 1853.....	7,948,579	5,865,189	13,813,768

Decrease....	\$149,343	\$1,398,576	\$1,547,919
The deposits of precious metal for the first quarter of the year were:			

	1853.	Gold.	Silver.
January.....		\$4,962,097	\$14,000
February.....		3,548,523	13,000
March.....		7,533,752	70,000
Total.....		\$16,044,372	\$97,000

	1854.	Gold.	Silver.
January.....		\$4,215,579	\$108,000
February.....		2,514,000	1,166,000
March.....		3,982,000	147,500
Total.....		\$10,711,579	\$1,421,500

Showing for the three months of this year a decrease of \$5,332,793 in the deposits of gold, and an increase of \$1,323,940 in the deposits of silver.

Movement on the Pennsylvania Lines of Public Works.

The Philadelphia Ledger gives the following statement of the amount of merchandise transported from that city to Pittsburgh by the Pennsylvania Railroad and Pennsylvania and Ohio Line, for twelve days of the month of March:

	Penn. Railroad.	Penn. & Ohio Line.
March 6th.....	1,001,705	194,780
" 7th.....	947,543	127,384
" 8th.....	907,009	82,184
" 9th.....	905,122	108,436
" 10th.....	718,202	68,426
" 11th.....	760,140	104,596
" 12th.....	900,514	177,156
" 13th.....	763,033	97,981
" 14th.....	759,266	345,507
" 15th.....	780,086	211,595
" 16th.....	715,100	218,652
" 17th.....	659,196	160,075
" 18th.....		

Total..... 9,816,916 lbs. 1,896,775 lbs.

It is stated that in addition to this Messrs. Harris & Leech shipped during the same time, 1,920

tons goods, making the aggregate by canal and railroad, 7777 tons, or 15,553,691 lbs. of through freight to Pittsburgh in twelve days, or a fraction over 648 tons per day. The Pennsylvania Railroad Company shipped westward, from the 6th to the 18th, 622 tons of local freight. This swells the amount which passed over the Philadelphia and Columbia Railroad to 8,439 tons, or more than 703 tons per day.

Cleveland and Columbus Railroad.

The following is a statement of the operations of this road, for the year ending Dec. 31.

Received from passengers.....	\$632,640 80
" From freight.....	496,040 37
" From mail, \$34,735 35; express, \$23,335 32.....	58,120 67
From rents, \$806 44; dividends, \$4,265.....	5,071 44
Total.....	\$1,191,873 28

The expenses for repairs, transportation; interest, &c., were..... \$580,776 16

Surplus..... \$611,097 12

The annexed statement shows the general account of the road;

Construction.....	\$3,196,545 15
Construction, second track.....	90,891 02
Cars and engines.....	545,912 51
Real estate.....	34,119 96

Cleveland City and Delaware Co. Bonds..... 45,000 00

Stock of this Company..... 149,710 00

Columbus and Xenia Railroad Stock..... 5,050 00

Cleveland and Cincinnati Telegraph Stock..... 3,000 00

Steamboat Stock..... 54,000 00

Loan to Stockholders..... 47,500 00

Loan to Stockholders..... 51,000 00

Loan to Cleveland and Mahoning Railroad Co..... 12,000 00

Bills receivable..... 116,542 88

Individual and other accounts..... 6,073 28

Capital stock..... 3,933,652 00

Mortgage bonds..... 67,000 00

Other Convertible Bd's..... 8,000 00

Franklin County Bd's..... 50,000 00

Bills payable and other liabilities..... 8,599 84

Borrowed from earnings..... 293,092 96

The dividends of this Road have been 28 per cent. in 26 months.

\$4,360,344 80

The Lake in the Great Desert.

Mr. William P. Blake, who recently accompanied the party of Lieut. J. G. Parke across the desert lying between the San Bernardino mountain and the Colorado river, was enabled, in the capacity of geologist, to make—it is said—the only scientific survey ever attempted of that region. He says that the fact of the ancient existence of an immense inland lake in that section of the country, is established by unmistakable signs of shells and sand beaches, extending for many miles along the Valley which was traversed by the party. Mr. Blake states that the eastern borders of this vast lake reached some distance to the eastward of the Colorado river. During his journey he saw great quantities of old sea drift silicified wood and marine fossils, all highly polished by the action of the drifting sand.

Statistics of Maine Railroads for the year ending Dec. 31, 1853.

ANDROSCOGGIN AND KENNEBEC RAILROAD.

Length of line—55 miles.	
Weight of Rail—63 lbs per yard.	
Capital paid in.....	\$824,131 80
Cost of Road.....	2,030,140 38
Amount of indebtedness.....	1,049,549 00
Due the Corporation.....	15,589 37
Number of passengers in 1853.....	110,784
Received from passengers.....	\$79,305 51
" " freight.....	68,176 41
" " other sources.....	6,594 09

Total receipts in 1853.....	\$154,076 01
Miles run by passenger trains.....	69,285
" Freight.....	34,100
Number of Stockholders.....	1419
" residing in Maine.....	1294
Dividends in 1853, none.	

KENNEBEC AND PORTLAND RAILROAD.

Length of line—72 1/2 miles.	
Weight of Rail—50 lbs per yard.	
Stock paid in.....	\$1,073,673 99
Whole cost of Road.....	2,520,981 80
Amount of indebtedness.....	1,439,694 48
Due Corporation.....	93,081 40
Number of passengers in 1853.....	241,671
" through " " ".....	34,506
" way " " ".....	207,165
Received from passengers.....	\$134,432 50
" " freight.....	34,628 71
" " other sources.....	7,941 79

Total receipts in 1853.....	\$177,003 69
Miles run by passenger trains.....	109,084
" freight " ".....	49,318
" other trains.....	830
Number of Stockholders.....	817
Dividends in 1853, none.	

North and South Railways.

The Cleveland papers, contain the proceedings of a railroad meeting held in that City on the 29th all, in favour of the Evansville, Indianapolis and Cleveland straight line railroad, Mr. Smith, President of the Company addressed the meeting, and the following resolutions were unanimously adopted, this road when constructed will be an extension of the Eastern lines from Indianapolis to Evansville on the Ohio river, about 150 miles, completing the through line from Cleveland on Lake Erie, to Evansville on the Ohio river of about 430, upon the same gauge, and being a part of the Central line to be extended from Evansville, by Paducah to Memphis, connecting the North with the South.

Arthur Hughes introduced the following resolutions which, being seconded by H. V. Willson were unanimously adopted;

"Resolved, That the construction of the Evansville, Indianapolis and Cleveland straight Line Railroad, and the line of road from Terre Haute to St. Louis, forming with the roads already built, a through line from Cleveland by Indianapolis to Evansville on the Ohio River, and also St. Louis on the Mississippi river, are works of high and paramount importance to the business and commerce of the City of Cleveland and the railroads centering there.

"Resolved, That the contemplated extension of the great through line from Evansville by Henderson, Smithland and Paducah to Memphis, Tenn., to connect there with lines to New Orleans, Arkansas and Texas, making through Central line in the valley of the Mississippi from New Orleans by Evansville, Indianapolis and Cleveland between the north and south, is a work of great national importance.

"Resolved, That the Companies and individuals engaged in the extension of this great line are entitled to our cordial co-operation and support.

"Resolved, That the thanks of this meeting are due and are hereby tendered to the Hon. Oliver

H. Smith for his able eloquent exposition of the merits and claims of this great Railroad enterprise.

"On motion, the meeting adjourned."

S. J. ANDREWS, Chairman.

GEO. A. BENEDICT, Secretary.

American Railroad Journal.

Saturday, April 15, 1854.

Back Numbers of the Journal.

Those who wish back numbers of the JOURNAL for binding are requested to order them at once, as we shall be able to supply them but a few weeks longer.

We can furnish BOUND VOLUMES for any or all years complete since 1831—price \$5—per year.

Our RAILWAY MAP in sheets will be sent by mail to any address on the receipt of \$1.00—price on rollers \$2.00.

We have a few copies of Mr. JOHNSON'S valuable work on the Northern route to the Pacific—price by mail \$1—with maps.

Probable Effect of an European War upon American securities.

An European War being certain, one of the most interesting problems involved, as far as this country is concerned, is its probable effect upon the intrinsic and marketable value of our securities, particularly those issued on account of railroads, and works of a similar character.

From the intimate relations which subsist between the United States and all the commercial nations of Europe, each is, to a certain degree, necessarily affected by the condition of the other. If one be prosperous, all share in this prosperity. If the contrary be the fact, all suffer. At the present day, no nation, however independent its action, and however free from political and diplomatic entanglements, can escape the effect of the conduct or condition of its neighbor. Commercially, they belong to one community. If a paralysis strike a particular branch of industry of one of the members, it falls upon a corresponding branch of that of another. Should cotton spinning in Great Britain cease, the production of the raw material in this country would be largely curtailed. If European nations become too poor to purchase our staples, their previous value is the measure of our loss. Our people, therefore, are to be affected by a war in the same manner as those of France or England, only in a vastly less degree.

But the effect of a war will extend beyond the mere influence it exerts upon the price of our staples. An opinion adverse to one of our more important interests, may do us as much harm as would the loss of one of our leading crops.—Should a war create a distrust as to the value of European securities, and depress their market value, a similar sentiment, by necessary sympathy, would cross the Atlantic, and exert a similar effect upon the securities of this country. There may be no necessary reason for such coincidence, and no satisfactory explanation for it. The price of English consols has certainly nothing to do with the value of Erie or New York Central stocks, yet the quotations of the latter dance attendance upon the former with as much certainty as the shadow does the substance.

The first shock that European securities receive—

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of \$100.

NAME OF COMPANY.	Miles open.	Capital paid in.	Funded debt.	Total cost of road and equipment.	Gross Earnings for last official year.	Net Earnings for last official year.	Dividend for last year.	Price of Shares.
Atlantic and St. Lawrence... Maine.	150	1,588,100	2,978,700	5,150,278	254,743	113,520	none	83
Androscoggin and Kennebec... "	55	809,878	1,016,500	2,064,458	140,561	80,053	none	30
Kennebec and Portland... "	72	952,621	291,80	2,514,067	168,114	100,552	none	41
Port., Saco and Portsmouth... "	51	1,855,500	123,884	1,459,384	208,669	.....	6	98
York and Cumberland... "	20	285,747	341,100	713,605	23,946	11,256	none	24
Boston, Concord and Montreal. N. H.	98	1,649,278	622,200	2,640,217	150,538	79,659	none	30
Concord... "	35	1,485,000	none.	1,485,000	305,805	141,836	8	108
Cheshire... "	54	2,078,625	720,900	3,002,094	287,768	55,266	5	37
Northern... "	82	8,016,634	.....	.....	328,782	163,075	5	50
Manchester and Lawrence... "	24	717,543	.....	.....	.....	.....	6	83
Nashua and Lowell... "	15	600,000	none.	651,214	132,545	51,513	8	108
Portsmouth and Concord... "	47	.....	.....	1,400,000	.....	.....	none	.....
Sullivan... "	26	.....	.....	673,500	.....	.....	none	12
Connecticut and Passumpsic. Vt.	61	1,097,600	550,000	1,745,516	.....	.....	none	28
Rutland... "	120	2,486,000	2,429,100	5,577,467	495,397	266,589	none	9
Vermont Central... "	117	8,500,000	3,500,000	12,000,000	.....	.....	.....	10
Vermont and Canada... "	47	1,500,000	.....	1,500,000	Leased to the Vt. C.	.....	cent.	97
Western Vermont... "	51	392,000	700,000	.....	Recently opened.	.....	none	.....
Vermont Valley... "	24	.....	.....	.....	.....	.....	none	.....
Boston and Lowell... Mass.	28	1,830,000	.....	1,995,249	388,108	130,881	7	91
Boston and Maine... "	83	4,076,974	150,000	4,092,927	659,001	338,215	7	101
Boston and Providence... "	53	3,160,390	390,000	3,546,214	469,656	227,484	6	82
Boston and Worcester... "	69	4,500,000	425,000	4,845,967	758,819	331,296	7	100
Cape Cod branch... "	28	421,295	171,800	633,906	60,743	30,056	2	40
Connecticut River... "	52	1,591,100	193,500	1,801,946	229,004	72,028	5	55
Eastern... "	75	2,850,000	500,000	3,120,391	488,793	241,017	7	84
Fall River... "	42	1,050,000	none.	1,050,000	229,445	99,589	8	90
Fitchburg... "	66	3,540,000	112,305	3,623,073	574,574	232,787	6	89
New Bedford and Taunton... "	20	500,000	none.	520,475	164,230	43,950	7	117
Norfolk County... "	26	547,015	819,743	1,245,927	67,251	23,415	none	68
Old Colony... "	45	1,964,070	282,300	2,293,534	374,897	122,816	none	96
Taunton Branch... "	12	250,000	none.	307,136	137,406	24,399	8	.....
Vermont and Massachusetts... "	77	2,140,536	1,001,500	3,203,333	218,679	18,648	none	16
Worcester and Nashua... "	45	1,134,000	171,210	1,321,945	162,109	66,900	4	62
Western... "	155	5,150,000	5,319,520	9,953,759	1,525,224	746,736	7	97
Stonington... R. I.	50	.....	467,700	.....	240,572	110,892	.....	69
Providence and Worcester... "	40	1,457,500	300,000	1,791,999	291,417	120,892	6	95
Canal... Conn.	45	922,500	500,000	1,400,000	.....	.....	4	65
Hartford and New Haven... "	72	2,350,000	800,000	3,150,000	639,529	294,269	10	123
Housatonic... "	110	.....	.....	2,500,000	329,041	168,902	none	.....
Hartford, Prov. and Fishkill... "	50	.....	.....	In progress	69,629	.....	none	.....
New London, Wil. and Palmer... "	66	558,861	800,000	1,511,111	114,410	.....	.....	39
New York and New Haven... "	61	3,000,000	1,641,000	4,978,487	806,713	428,173	7	95
Naugatuck... "	62	926,000	440,000	.....	.....	.....	8	.....
New London and New Haven... "	55	750,500	650,000	1,380,610	Recently opened.	.....	none	40
Norwich and Worcester... "	54	2,121,110	701,600	2,596,488	267,561	116,965	4	54
Buffalo and New York City... N. Y.	91	900,000	1,550,000	2,550,500	Recently opened.	.....	none	.....
Buffalo, Corning and N. York... "	132	.....	.....	In progress	.....	.....	none	65
Buffalo and State Line... "	69	879,636	872,000	1,921,270	Recently opened.	.....	.....	130
Canandaigua and Niagara F... "	50	.....	.....	In progress	.....	.....	.....	.....
Canandaigua and Elmira... "	47	425,509	582,400	987,627	76,760	39,360	none	68
Cayuga and Susquehanna... "	35	687,000	400,000	1,070,786	74,241	23,496	none	.....
Erie, (New York and Erie)... "	464	10,000,000	24,003,865	33,070,863	4,318,962	1,800,181	7	70
Hudson River... "	144	3,740,515	7,046,395	10,527,654	1,063,659	338,783	none	63
Harlem... "	130	4,725,250	977,463	6,102,935	681,445	324,494	4	49
Long Island... "	95	1,875,148	516,246	2,446,391	205,068	44,070	none	28
New York Central... "	504	23,085,600	10,773,823	33,859,423	.....	.....	.....	106
Ogdensburg (Northern)... "	118	1,579,969	2,969,760	5,133,834	480,137	195,847	.....	19
Oswego and Syracuse... "	35	350,000	201,500	607,803	90,616	43,609	.....	70
Plattsburg and Montreal... "	23	174,042	131,000	349,775	Recently opened.	.....	none	.....
Rensselaer and Saratoga... "	25	610,000	25,000	774,495	213,078	96,737	.....	.....
Rutland and Washington... "	60	850,000	400,000	1,250,000	Recently opened.	.....	.....	.....
Saratoga and Washington... "	41	899,800	940,000	1,832,945	173,545	135,017	none	30
Troy and Rutland... "	32	237,690	100,000	329,577	Recently opened.	.....	.....	33
Troy and Boston... "	39	430,936	700,000	1,043,357	Recently opened.	.....	none	.....
Watertown and Rome... "	96	1,011,940	650,000	1,693,711	225,152	116,706	8	96
Camden and Amboy... N. J.	65	1,500,000	.....	4,327,499	1,388,385	478,413	10	148
Morris and Essex... "	45	1,022,420	128,000	1,220,325	149,941	79,252	7	.....
New Jersey... "	31	2,197,840	476,000	3,245,720	603,942	310,259	10	131
New Jersey Central... "	63	986,106	1,500,000	2,379,880	260,899	124,740	3	.....
Cumberland Valley... Penn.	58	1,184,500	13,000	1,265,143	118,617	76,890	5	.....
Erie and North East... "	20	600,000	.....	750,000	Recently opened.	.....	.....	125
Harrisburgh and Lancaster... "	36	830,100	713,227	1,702,523	265,327	106,320	8	55
Philadelphia and Reading... "	95	6,656,332	10,427,800	17,141,987	2,480,626	1,251,987	7	73
Philad., Wilmington and Balt... "	98	5,000,000	2,399,166	8,067,285	868,038	541,769	5	76

Railway Share List,

Compiled from the latest returns—corrected every Wednesday—on a par valuation of \$100.

NAME OF COMPANY.	Miles open.	Capital paid in.	Funded debt.	Tot. cost of road and equip'm't.	Gross Earnings for last official year.	Net earnings for last official yr.	Dividend for do.	Price of shares.
Pennsylvania Central..... Penn.	250	9,768,155	5,000,000	13,600,000	1,943,827	617,625	....	97
Philadelphia and Trenton.... "	80	.....	.....	.....	.....	.....	.....	.....
Pennsylvania Coal Co..... "	47	.....	.....	.....	.....	.....	.....	1024
Baltimore and Ohio..... Md.	381	13,118,902	5,677,103	22,254,338	2,033,420	798,193	7	62
Washington branch..... "	38	1,650,000	.....	1,650,000	348,622	216,237	8	....
Baltimore and Susquehanna.. "	57	.....	.....	.....	413,673	152,536	.....	.....
Alexandria and Orange..... Va.	65	.....	.....	In prog.	.....	.....	.....	.....
Manassas Gap..... "	27	.....	.....	In prog.	.....	.....	.....	.....
Petersburgh..... "	64	769,000	173,867	1,163,928	227,593	72,370	7	77
Richmond and Danville.... "	73	1,372,324	200,000	In prog.	.....	.....	.....	70
Richmond and Petersburg.. "	22	685,000	.....	1,100,000	122,861	74,113	none	40
Rich., Fred. and Potomac.... "	76	1,000,000	503,006	1,531,238	254,376	113,256	7	100
South Side..... "	62	1,357,778	640,000	2,106,467	62,762	.....	.....	.....
Virginia Central..... "	107	1,673,684	469,150	2,392,215	210,052	99,077	10	50
Virginia and Tennessee.... "	73	2,650,091	707,958	3,545,256	109,268	42,736	none	98
Winchester and Potomac.... "	32	180,000	120,000	416,532	89,776	.....	12	....
Wilmington and Raleigh.... N. C.	161	1,338,878	1,134,698	2,965,574	510,038	153,898	6	....
Charlotte and South Carolina. S. C.	110	.....	.....	.....	.....	.....	.....	.....
Greenville and Columbia.... "	140	1,004,231	500,000	In prog.	.....	.....	.....	.....
South Carolina..... "	242	3,858,840	3,000,000	7,002,396	1,000,717	609,711	7	125
Wilmington and Manchester. "	.....	.....	.....	In prog.	.....	.....	.....	.....
Georgia Central..... Ga.	191	3,500,000	418,187	3,465,879	986,074	535,608	8	115
Georgia..... "	211	4,000,000	1,214	.....	934,424	456,468	7½	.....
Macon and Western..... "	101	1,013,088	163,000	1,277,334	278,739	149,960	9	101
Muscogee..... "	71	.....	.....	In prog.	59,590	21,731	.....	.....
South Western..... "	50	586,887	150,000	743,525	129,395	71,535	8	.....
Alabama and Tennessee River Ala.	55	.....	.....	In prog.	.....	.....	.....	.....
Memphis and Charleston.... "	93	776,259	400,000	In prog.	.....	.....	.....	.....
Mobile and Ohio..... "	33	879,868	.....	In prog.	.....	.....	.....	.....
Montgomery and West Point. "	88	688,611	.....	1,330,960	173,542	76,079	8	.....
Southern..... Miss.	60	.....	.....	.....	.....	.....	.....	.....
East Tennessee and Georgia.. Tenn.	80	835,000	541,000	In prog.	.....	.....	.....	.....
Nashville and Chattanooga.. "	125	2,093,814	850,000	In prog.	.....	.....	.....	.....
Covington and Lexington.... Ky.	38	1,430,150	900,000	In prog.	.....	.....	.....	63
Frankfort and Lexington.... "	29	357,218	.....	584,902	87,421	44,250	.....	80
Louisville and Frankfort.... "	65	.....	.....	.....	.....	.....	.....	.....
Maysville and Lexington.... "	.....	.....	.....	In prog.	.....	.....	.....	45
Cleveland and Pittsburgh.... Ohio.	100	1,979,100	1,142,200	3,279,908	432,682	267,278	10	83
Cleveland and Toledo..... "	147	2,000,000	1,600,000	.....	.....	.....	.....	89
Cleveland, and Erie..... "	95	.....	.....	.....	.....	.....	.....	.....
Cleveland and Columbus.... "	135	3,027,000	408,200	3,655,000	777,793	483,454	12	115
Columbus, Piqua and Indiana. "	46	.....	.....	2,000,000	.....	.....	.....	65
Columbus and Lake Erie.... "	61	.....	.....	.....	.....	.....	.....	.....
Cincinnati, Ham. and Dayton "	60	2,100,000	500,000	2,659,653	321,793	200,967	.....	1024
Cincinnati and Marietta.... "	.....	.....	.....	In prog.	.....	.....	.....	62
Dayton and Western..... "	40	310,000	550,000	925,000	Recently opened.	.....	.....	75
Dayton and Michigan..... "	20	.....	.....	In prog.	.....	.....	.....	.....
Eaton and Hamilton..... "	36	.....	.....	.....	.....	.....	.....	56
Greenville and Miami..... "	31	.....	.....	.....	.....	.....	.....	.....
Hillsboro..... "	37	.....	.....	In prog.	.....	.....	.....	.....
Little Miami..... "	84	2,668,402	482,000	3,169,733	667,559	352,133	10	111
Mansfield and Sandusky.... "	.....	900,000	1,000,000	1,855,000	.....	.....	.....	.....
Mad River and Lake Erie.... "	167	2,387,200	1,767,000	4,110,148	540,518	113,401	.....	77½
Ohio Central..... "	57	.....	.....	In prog.	.....	.....	.....	79
Ohio and Mississippi..... "	.....	.....	.....	.....	.....	.....	.....	.....
Ohio and Pennsylvania.... "	187	1,750,700	2,450,000	.....	Recently opened.	.....	.....	.....
Ohio and Indiana..... "	.....	.....	.....	In prog.	.....	.....	.....	.....
Scioto and Hocking Valley... "	44	750,000	300,000	.....	Recently opened.	.....	.....	.....
Columbus and Xenia..... "	54	1,291,700	26,000	1,310,062	314,434	168,612	10	107
Evansville and Illinois.... Ind.	31	.....	.....	In prog.	237,506	.....	.....	.....
Indiana Central..... "	.....	.....	.....	.....	.....	.....	.....	77½
Indiana Northern..... "	131	.....	.....	.....	.....	.....	.....	.....
Indianapolis and Bellefontaine "	83	.....	.....	.....	Recently opened.	.....	.....	87
Indianapolis and Cincinnati. "	90	1,128,486	1,289,000	1,869,932	Recently opened.	.....	.....	76
Lafayette and Indianapolis.. "	62	.....	.....	.....	.....	.....	.....	.....
Madison, Indianapolis & Peru "	159	2,647,700	1,241,300	2,400,000	516,414	268,075	10	70
Terre Haute and Indianapolis "	72	682,387	663,100	1,353,019	105,944	71,446	4	108
Rock Island and Chicago.... Ill.	.....	.....	.....	.....	.....	.....	.....	.....
Chicago and Mississippi.... "	135	2,400,000	4,000,000	4,600,000	.....	.....	.....	.....
Illinois Central..... "	.....	.....	.....	.....	.....	.....	.....	.....
Galena and Chicago..... "	92	.....	500,000	In prog.	473,548	286,152	.....	121
Michigan Southern and Ind. N. Mich.	315	.....	3,741,564	7,276,616	1,200,922	586,929	17	118½
Michigan Central..... "	282	.....	3,977,563	8,618,505	1,145,598	582,816	8	104½
Pacific..... Mo.	38	.....	non	In progres	Recently opened.	.....	.....	.....

ed, was consequently followed by a corresponding decline of those of the United States, in obedience to what seems to be an unvarying law. We may always calculate a certain result in this country to be due to a real or assumed condition of affairs in Europe. But in the present case, there are other reasons than those named, why this country should feel the effects of an European war. For several years past our people have been in the habit of borrowing large sums from abroad for the prosecution of our public works. It has been foreign capital that has enabled our people to accomplish no small part of the immense results that have been achieved. If the whole, or a considerable portion of this supply be cut off, the entire burden of the construction of our public works will be thrown upon our own people. This fact must draw large sums from other investments, and create a general stringency, the effect of which must be to reduce the market value of all our securities.

The prospect of war has already produced the results we have described. It has almost entirely checked the flow of European capital to this country—imposing upon our own people the burden of providing themselves the whole cost of our public works. A depressed share and bond market is the necessary result.

The degree of the depression of the market value of the securities of this country will depend, to a very considerable extent, upon the degree of the fluctuations in Europe. But as the causes that will produce, for a time, similar results, are different, our own market must recover its tone so soon as it is seen that the real value of our securities are not impaired, and so soon as our people adapt themselves to the altered state of affairs. The market now yields to a sentiment borrowed from abroad, and to a condition of things in this country, which must work its own cure. An European war certainly will not diminish the earnings of our railroads. Thus far it has added largely to their earnings, by the increased price created for many of our more important staples, which is rapidly drawing them from the interior to the seaports. The internal trade of the country was never so active as at the present time. Our railroads were never before so successful. The earnings of the entire investment in the United States are at least 25 per cent. greater than at a corresponding period the past year. With an equal ease in the money market, it may be confidently stated, that quotations would at the present time rule from five to ten per cent. higher than last year. The investment is worth such an advance were its value to be measured by the amount of income.

We cannot, at so early a period, estimate the influence of an European war upon this country. There seems to be no probability, however, that this country will, in any way, become a party to it. Our people, true to their money-loving instincts, will think it a good time, while the rest of Christendom is at war, to do the work of the world, and charge their own price for it. It may turn out that commerce can only be safely carried on through the medium of American bottoms. Should the war become general, provisions of all kinds must command a high price. The only staple, the price of which would be injuriously affected would be cotton, so that on the whole

were this country not indebted to Europe, and had we not been accustomed to rely upon European capital to carry forward our works, it seems probable that the first effect of a war would apparently be favorable. It would increase the value of most of our products. It would give additional employment and higher wages, to many of our more important interests, which would nearly balance the injury that others would suffer. It would in the end result in sending a large amount of capital into the country, as the stability of our institutions, the prosperity of our people, the intrinsic value of our investments, would contrast most favorably with what the old country could show. Such must be the case so soon as we become acclimated to the new state of things, and so soon as the favorable contrast referred to, can be properly appreciated. Whether peace or war be the state of Europe, the greater value of investment in this country must be seen and acknowledged, and must continue to attract to it, steadily increasing amounts of foreign capital.

While, therefore, we think it very probable that a rapid decline of the securities of this country may follow a similar decline in Europe, this fact does not in the slightest degree invalidate their value. Should foreigners see stocks quoted in our market at a lower figure than cost, there is no occasion for distrust or alarm, nor is there any reason to suppose that they have paid more than the securities they hold are worth. The depression will be temporary. The state of Europe has not affected their value in the slightest degree. The railroad investment in this country was never worth so much as at this instant. We have regarded the stringency which has prevailed for the past nine months as calculated to produce the most beneficial results. Had the money market continued easy, our people under the flush and excitement of success, would have rushed wild into visionary projects. Upon such, an effectual quietus has been put. Under the present state of the market, rival, or useless, roads will not be built. The roads that are constructed will, consequently, become all the more valuable. A stringency in our money market, therefore, should assure, instead of frightening, the holder of stocks or bonds. A depression in prices merely indicates what is to him, a wholesome state of things; not that his investment is the less valuable, but in fact more so.

Under such circumstances, to return securities to this country for sale, would be the greatest folly. Such a course pursued to a considerable extent would defeat the object of returning them. It would only serve to depress still more their value. As their intrinsic value is entirely independent of their market value, the two will harmonize in our own markets, so soon as the present causes of the depression, which are accidental and temporary in their character, shall cease to operate.

Consolidated.

The Fall River Railroad Company have voted to unite with the Old Colony Railroad, by a vote of 2667 yeas, to 2442 nays.

New York and Erie Railroad.

Wm. J. McAlpine, Esq., has resigned the offices of Assistant President and Chief Engineer of this Railroad.

Report of the State Engineer upon the State Canals.

[Continued from Page 187.]

IV.—THE COST AND CHARGES OF TRANSPORT.

This subject was considered at some length in my last annual report. The views therein presented will be incorporated in the present examination.

An investigation of the comparative advantages of the several channels of communication between the seaboard and the interior, requires an examination into the cost and charges of transport by the various modes of land and water conveyance.

The charges cannot be relied upon in this investigation, because they fluctuate on the various routes, and on different articles conveyed—competition reducing them to a minimum, and monopoly raising them to a maximum.

The cost, however, furnishes a more reliable basis for comparison, as the elements upon which it depends are usually, affected alike on the different routes.

These elements consist of loading, conveying, discharging, warehouseing, insurance, and, in artificial channels, the necessary expenses of construction and maintenance.

The cost of loading and discharging depends upon the price of labor, and the facilities afforded; and the cost of insurance upon the character of the navigation.

The cost of conveyance upon the ocean is constant; but the charges are the least from that port at which is concentrated the largest amount of trade, and which possesses a favorable climate, and the greatest advantages for reaching the open sea.

New York, possessing these advantages, and those of concentrating at its harbor, through the influence of the great internal channels of commerce, the trade of the most extended fertile district of the interior of the country, has thus become the chief commercial centre of this continent.

The chain of Western Lakes terminating on the borders of this State, furnishes a transport second only to that of the ocean.

The duration of navigation upon them is limited in consequence of the closing of the harbors during the winter season.

The Hudson affords an example of the best description of river navigation, in consequence, of the uniformity of the flow and the smoothness and depth of its waters, allowing the use of either sail or steam vessels, and of light hulls; thereby increasing the proportion of the weight of the cargo to the whole weight moved.

The Mississippi, and its larger branches, have the advantage of a long route and a current of from three to six miles an hour in the direction of the greatest tonnage. The fluctuations of their waters and obstructions of their channels, the higher price of labor, the necessity of employing steam vessels exclusively, and the hazards of the navigation, increase the cost of transportation on these waters.

The cost of movement upon a canal depends upon the relative sectional areas of the boat and of the canal, upon the actual size of the two, and upon the elevation to be overcome.

The suspension of navigation upon the Northern water lines, increase the cost of transportation upon them, as the loss of time and the interest upon the capital invested is charged upon the business done during the limited portion of the year, while they are navigable.

The cost of movement upon a railroad depends upon the amount of the curvature, the inclination of its gradients, and the elevation to be overcome, and its limited capacity in comparison with its cost.

The cost of transport on artificial works is increased by the tax necessary to be levied to give a remuneration for the capital invested, and also to pay the current expenses of operating and maintaining the work.

The other circumstances constituting the ex-

pense of these modes of transport, will be treated of in a subsequent part of this report.

Having thus given the characteristics of the different modes of transport, it becomes necessary to state the actual cost of each, for the purpose of making a practical application to the several channels of trade between the interior and the sea coast.

In arriving at these general results, it will not be necessary to regard those fluctuations of trade and commerce, tending to increase or diminish the cost of transport, which are of only a temporary character.

The following table furnishes the distance travelled by sailing vessels, and the ordinary charges to England, France, and the West Indies and South America, by which it will be seen, as has been previously remarked, that the charges from New York to the principal importing ports of the world, are less than from any other American city. The tables furnish the charges, and the cost may be assumed at two-thirds of their charges:—

Table of Charges.

From	To Liverpool.			To Havre.		
	Miles.	Per ton.		Miles.	Per ton.	
		Voy- age.	Per Mile.		Voy- age.	Per Mile.
Quebec....	2910	\$11 00	8.75	3130	....	....
Boston....	3020	5 25	1.74	3000	\$5 00	1.67
New York..	3150	5 00	1.60	3381	4 50	1.35
Philadelp'a.	3295	5 50	1.70	3385	5 00	1.47
Baltimore..	3530	5 75	1.60	3620	6 00	1.65
Richmond..	3395	6 00	1.70	3485	6 00	1.72
N. Orleans.	4755	7 50	1.60	4845	7 50	1.54

To Havana.

To Rio Janeiro.

From	To Havana.			To Rio Janeiro.		
	Miles.	Per ton.		Miles.	Per ton.	
		Voy- age.	Per Mile.		Voy- age.	Per Mile.
Quebec....	1950	....	....	6010	....	....
Boston....	1480	\$4 00	2.70	5310	\$4 00	0.75
New York..	1250	3 00	2.40	5240	4 00	0.76
Philadelp'a.	1220	4 00	3.27	5000	5 00	1.00
Baltimore..	1215	5 00	4.11	5000	6 00	1.20
Richmond..	1170	5 50	4.70	5000	6 00	1.20
N. Orleans.	595	4 00	6.72	6555	7 00	1.06

The rates of freight specified may be considered, (they are as far as can be ascertained,) a fair average freight of vessel's capacity for the past three years. To Rio Janeiro the freights are low proportionately, as the return freights are generally good.

Table of the cost of Transport per ton per mile.

Ocean, long voyage.....	1 Mill
" short ".....	2 to 4 "
Lakes, long voyage.....	2 "
" short ".....	3 to 8 "
Rivers, Hudson and of similar charac'r	2.5 "
" St. Lawrence and Mississippi tributaries of "	8 "
Canals, Erie enlargement.....	5 to 10 "
" other large but shorter.....	4 "
" ordinary size.....	5 to 6 "
" " with great lockage	6 to 8 "
Railroads transporting coal.....	6 to 10 "
" not for coal, favorable lines and grades.....	12.5 "
" not for coal, steep grades, &c..	15 to 25 "

Applying these rates to the transportation of freight between the Eastern end of Lake Erie and the Atlantic ports, gives the cost for the several routes as follows:—

- 1st. By Welland canal, Lake Ontario, and Oswego and Erie canals enlarged, and Hudson river.....\$2 48
- 2d. By Erie canal enlarged and Hudson river to New York.....2 52
- 3d. By the Canadian canals and the St. Lawrence to Quebec.....2 58
- 4th. By the Welland canal, Lake Ontario, the Oswego and Erie canals and Hudson river to New York.....2 94
- 5th. By the Erie canal and the Hudson riv-

er to New York.....	8 16
6th. By the Welland canal, Lake Ontario, St. Lawrence, proposed Caughnawaga canal, Champlain Lake and canal, and the Hudson river to New York.....	3 43
7th. By the New York Central Railroad and the Hudson river.....	6 19
8th. By the Welland canal, Lake Ontario, and Odenburg and Massachusetts Railroads.....	8 02
9th. By the New York and Erie Railroad to New York.....	8 43

It appears therefore that after the Erie Canal is enlarged, it will be the cheapest channel of trade between Lake Erie and the Atlantic; but there is now a difference in the cost of transportation, in favor of the route by the Canadian Canals to Quebec.

Applying the foregoing rates to the several routes between different points on the Ohio, and Mississippi, and the seaboard, gives the following results:—

The cost per ton from New York by the Erie Canal, Lake Erie to Cleveland, and the Ohio canals to Beaver, is \$4.77.

The same from New York to Cleveland, and the Ohio canal to Portsmouth, is \$5.97; or by way of Beaver and the Ohio river, \$5.85.

The same from New York to Toledo and the Ohio canal to Cincinnati, is \$5.82.

The same from New York to Toledo and the Indiana canal to Evansville, is \$6.99.

The cost from New York, by the Erie canal and the great lakes, to Chicago, thence to Peru, and the Illinois and Mississippi rivers to St. Louis, is \$7.09, and to Cairo is \$7.61.

The cost per ton from the capes of the Delaware through the Delaware and Chesapeake, and the Pennsylvania canals, Portage railroad and Ohio river to Beaver, is \$4.59; to Portsmouth, \$5.67; to Cincinnati, \$5.98; to Evansville, \$6.96; to Cairo, \$7.64.

The same from the capes of the Delaware by Philadelphia, the Union canal and to Beaver, as before, is \$4.31; to Portsmouth, \$5.39; to Cincinnati, \$5.70; to Evansville, \$6.68; to Cairo, \$7.26.

The cost per ton from the capes of Virginia to Baltimore, and thence by the Baltimore and Ohio railroad to Wheeling, is \$6.99.

The cost per ton from the capes of Virginia to Richmond, thence by the James River canal and the Kanawha, and Ohio rivers to Portsmouth, is \$4.11; Cincinnati, \$4.42; Evansville, \$5.40; Cairo, \$5.98.

The cost per ton from St. Louis to New Orleans, including the extra cost of drayage and shipment at New Orleans, is \$6.89.

From the above statement it will be seen that the Pennsylvania canals reach the Ohio river at Beaver and Portsmouth 46 cents per ton cheaper than the New York and Ohio canals—Cincinnati, Evansville and Cairo, 12 cents cheaper.

The Virginia canal, if completed, would reach the Ohio river at Portsmouth \$1.74 per ton cheaper than the New York and Ohio canals; and Cincinnati, Evansville and Cairo, \$1.40 cheaper.†

The dividing line of trade between the Pennsylvania and New York canals, is 46 miles north of Beaver and Portsmouth, and 12 miles north of Cincinnati and Evansville; but when the enlargement of the Erie canal is completed, the dividing line of trade, in accordance with the same principle,

will be extended to the Ohio, and for a distance of 80 miles up that river from Beaver (say to Pittsburgh,) and will embrace all of the trade below that point, until it is intercepted by that which will descend to New Orleans.

The dividing line of trade between New Orleans and the New York canals, is now above the mouth of the Illinois river, but when the Erie canal is enlarged with the advantages of the New York market, and the facility of foreign shipment therefrom, it will be extended to the Mississippi, at least as far down as the mouth of the Ohio.

The completion of the enlargement of the Erie canal will reduce the expense of transportation about seventy-five cents per ton, which will increase the area of the drainage of its trade as far as that sum will transport by land or water, and will also increase the amount of trade within the present drainage by permitting the exportation of many articles of large bulk, and small value, which are restrained at the present time, by the cost of transportation. This extension, as will be seen by the application of the rates given in the preceding table, is equal to two hundred and fifty miles on a river similar to the Ohio; one hundred and fifty on an ordinary canal; fifty miles on a railroad; and five to seven miles on common roads where these distances are not met by competing lines, and one half of those distances where they are so met.

The accompanying map shows the routes of the channels of trade which have been above discussed, and also the districts affording the trade of the several channels. The last annual report and its accompanying tables furnish full statistics of this trade.

The foregoing tables show the relative cost of transport by each route, allowing on each, a sum which will pay the interest on the expenditure which has been made to construct the artificial works on them. They do not include the tolls which are charged to reimburse the cost of the works, nor the charges which are necessary to be paid to the forwarders.

If such tolls and charges are made upon the same basis upon each route, the expense of transportation would be in the same ratio as the cost, charges given in the preceding tables, while the actual charges would probably be in each case, about double the cost charges.

The annexed table marked C shows the charges on the principal water and railroad lines, according to the last published rates.

V.—THE COMPARATIVE COST, CAPACITY AND REVENUE OF THE ERIE CANAL AND THE PARALLEL RAILROADS, AND THE COST AND CHARGES OF TRANSPORTATION THEREON.

The cost of the original Erie Canal was \$7,143,789 86, and its estimated cost when enlarged, including the cost of the original canal, is about thirty-five millions seven hundred thousand dollars.

The cost of the Erie Canal, with the equipment necessary to perform its business corresponding to that of the Railroads, is, for the original Canal, eleven millions of dollars, and for the enlarged Canal, similarly equipped, would be forty-six millions of dollars.

The cost of the New York Central Railroad, including its equipment, was twenty-two millions of dollars, and of the New York and Erie, thirty-five millions.

The capacity of the Erie Canal as originally constructed, was equal to one and a half millions of tons carried through, and when enlarged, it will be equal to seven millions of tons. The tonnage of last year moved upon all the Canals, was 4,247,853 tons; but the reports from the collectors of tolls do not show how much of this tonnage was moved on the Erie Canal, nor how much of it passed through the whole length.

The tonnage of freight moved on the New York Central Railroad, the last year, was about 360,000 tons, and on the New York and Erie, was 631,039 tons.

The amount of through freight carried upon

these two roads during the last year was less than one hundred and twenty thousand tons.

The tolls, at the present rates due to the capacity of the Erie Canal, as originally constructed, would be two and a half millions of dollars, and adding the charges of the forwarders, its revenue would be six millions of dollars per annum.

The tolls due to the capacity of the enlarged Canal, when performing its complement of business, and at the present rate of tolls, would be ten millions of dollars, and by adding the charges of the forwarders, its revenue would be nearly twice that sum.

The capacity of both of these roads, with double tracks, and fully equipped, and in operation the whole year, while doing a passenger business, is equal to that of a canal of the original size of the Erie, or one and a half millions of tons per annum.

The cost of transportation on the Erie Canal, including its repairs and maintenance, and the expenses of the forwarders is five mills per ton per mile.

The cost of transportation of freight on the Central Railroad, including items of expense, corresponding to those above stated, was nineteen mills per ton per mile, and on the New York and Erie, was thirteen mills.

The charges for the transportation of all the freight on the Canals in 1853, including the tolls paid to the States, averaged one cent and one mill per ton per mile.

The charges for the transportation of all freight on the Central Railroad, averaged three cents and four mills per ton per mile, and on the New York and Erie averaged two cents and four mills.*

The subject of internal improvements of this state cannot be properly examined without considering the canals and railroads as parts of a single system, and not, as has been erroneously supposed, as two systems antagonistic to each other.

It has been asserted that the revenue of the canals has been stationary or diminishing for several years past, and that this is owing to the competition of the trunk lines of railroads of this state. This alleged diminution of revenue on the canal has been contrasted with the increased receipts upon the railroad lines mentioned, and the opinion expressed that the competition of the latter would reduce the revenue of the canals or render it stationary by diverting a portion of its business.

For the purpose of showing the incorrectness of these opinions and statements, it is necessary to compare the nature and amount of business done by these roads with that of the canals, and to ascertain the effect of the former upon the latter.

The first error is in assuming to make a comparison between the receipts of a railroad company and the tolls which are collected on the canals by the state, as the former embrace the expenses necessary for keeping the works and machinery in repair, to pay the interest on the capital invested, and to reimburse the principal, and also the whole expenses and profit charged upon the business done, while the latter embrace only the charges necessary to keep the works in repair and the payment of the interest and the principal expended upon their construction, and wholly omit the charges of the forwarders for the movement of the traffic.

The charges thus omitted embrace more than half of the whole cost of transportation upon the canal.

The second error is made by including in the comparison the sum collected by the railroads for the conveyance of passengers, while existing circumstances prevent any of this portion of the business from seeking the canals.

This item forms the largest amount of the receipts of the railroads in question.

The third error is the assumption that the

* There were one hundred and thirty thousand tons of lumber, and sixty-five thousand tons of coal, carried on the New York and Erie Railroad in 1853, at a charge of one and a third cents per ton per mile, which reduced the average charge below that of the Central.

* To the cost of the movement, in each of the above cases, has been added a price per ton which would on a movement of two millions of tons per annum, pay the annual cost of maintenance, and interest at 7 per cent on the cost of the artificial works through which the several routes pass. In the case of the enlargement of the Erie canal, the movement is taken at four millions of tons, in consequence of its greater capacity.

† The Legislature of Virginia, at its last session, decided to abandon the water line across the mountains, and a railroad is now being built, instead of the canal. This increases the cost of transportation by that route, and prevents its consideration as a competitor with the New York canals.

freighting business done by the railroads has been diverted from the canals, when by an examination of that business it will be seen,

1st. That the charges of railroad transportation being necessarily much higher than those of the canal, by taking the receipts instead of the tonnage, the comparison made is fallacious.

2nd. That a large portion of this freighting business was the transportation of articles which would not have offered itself to the canal had there been no parallel railroads.

3rd. That many of these articles being perishable could not be carried on the canals without serious loss to the owners.

4th. That the largest portion of the freighting business done by the railroads in question, is during that portion of the year when the canals are closed by frost.

5th. That the largest portion of the freighting business is the local business of the roads, which could not reach the canals without in many cases increasing the cost of transport beyond the value of the article.

And finally, that the very roads in question and their tributaries (excepting the Northern) bring a larger amount of freight to the canal than they convey of its appropriate business to market.

These several positions will be sustained by the following statements:

First. The total sum paid for transportation on the canals in 1852 is ascertained to be about \$6,400,000, which must be considered as the actual receipts of the canals in making a comparison with those of the railroads. The part of this sum collected for tolls was \$3,118,244, or less than one half of the whole of the receipts.

If this business had been performed on either of the two roads in question at their present charges, it would have cost the people over thirteen millions of dollars for its transportation.

The rate of the tolls were materially reduced in 1851, and again in 1852. In the last mentioned year the reduction was from twenty-five to forty per cent. on some of the leading articles, amounting to over three hundred thousand dollars.

The tonnage of the canals for the last ten years shows an increase in their business in each successive year, which would not be inferred from a statement of the tolls merely.

Second. The receipts from passengers on the Northern, Central, and New York and Erie Railroads in 1853 exceeded four millions of dollars, and were nearly as large in 1852. In 1851 they were about three and a half millions of dollars. The sums exceeded the amount received for the transportation of freight during that period.

Third. It has been previously stated that the charges for the transportation of freight carried on the New York and Erie Railroad were more than double, and of the Central more than three times those charged for the freight carried on the canal.

The number of tons carried on the canals in 1853, was 4,247,843, moved an average distance of about 200 miles, while the tonnage of the railroads referred to was 1,200,000 tons, moved an average distance of less than 100 miles.

Tables of the tonnage and value of all the articles transported on the Erie Canal and the Central Railroad from 1848 to 1852, show the distribution of the appropriate business upon the canal and upon the railroad, where they are contiguous and parallel.

The abstract of these tables was given in the last report as follows:

Of the articles of fur and peltry, live stock, pork in the hog, cheese, butter, wool, hides, peas and beans, dried fruit, cotton, hemp, grass and clover seed, hops, domestic spirits, leather and furniture, domestic woollens and cottons, and oysters and clams, there were transported upon the canals for the four years named, 311,518 tons, and upon the railroads, 131,871 tons—a proportion of 2.36 to 1, while the proportion of the whole tonnage is as 32 to 1.

The value of the first named quantity was \$68,-

191,776, and that of the latter, \$32,783,161, showing a value of that carried on the canals of \$219.36 per ton, and that upon the railroads of \$248.60 per ton.

Of the articles, boards and scantling, shingles, timber, staves, wood, lard, lard oil, tallow, flour, wheat, rye, corn, corn meal, barley, oats, other grain, bran and ship stuffs, potatoes, beer, linseed oil, oil cake, starch, agricultural implements, iron, machines, and salt, there were transported upon the canals for the four years named, 9,172,995 tons, and upon the railroads, 84,614 tons—a proportion of 108.4 to 1, while the proportion for the whole tonnage is as 32 to 1.

The value of the first named quantity was \$165,720,693, and that of the latter, \$2,983,837, showing a value per ton of that carried upon the canals of \$18.06, and that carried upon the railroads of \$35.26.

Of all the other articles named in the table, there were transported by the canals, 2,357,902 tons, and upon the railroads, 142,444 tons; having values of \$215,330,638 and \$28,203,109, or \$91.32 and \$196.61 per ton respectively.

By careful inspection of the table referred to, it appears that the following causes transferred the carriage of freight to railroads running parallel to and adjoining the State canals, even during the time the former was subject to the payment of the same tolls as were charged upon the canals.

1st. The entire suspension of navigation for a period averaging about five months in each year.

2d. The fluctuating price and demand in market for such articles as butter, cheese, live cattle, sheep and hogs, which also require the most speedy means of transit to prevent the loss of weight, quality and value, while undergoing transportation.

3d. The transportation of articles of such value and great bulk as fur and peltry, wool, hops, furniture, and domestic woollens and cottons, for which the railroad is better adapted than the canal, by reason of the much greater proportion of room to tonnage in the freight car than in a canal boat,* and the less time occupied by railroad trains in bringing these commodities (which are easily handled) to market; an object, in itself, sufficient to induce the consumer or manufacturer to pay the extra cost of railroad transportation.

4th. Western merchants who obtain the whole of their stock in New York, can afford to pay the extra cost of railroad transportation on light merchandise, and thereby compete with those who purchase in nearer but more expensive markets. The cheaper mode of transport, canal navigation, at the same time affords the means of delivering heavy goods at a less expense than by other modes, but occupies a longer time.

In addition to these causes, it may be added that the most convincing proof of the performance of the respective duties of the two great channels of trade, as above stated, is shown by the average value of the articles transported upon each; that upon the canals being for the four years before named \$48.68 per ton, and upon the railroads \$227.41.

Thus the conclusions are arrived at, that those products and articles which are now profitably transported over the railroads, could not, in most instances, be moved upon the canal without serious loss to the owner or producer, and that the diversion of this business from our navigable channels has served to augment the legitimate business of the Erie Canal.

An inspection of table R, in the appendix of last year's report, shows the tons of all articles delivered at tide-water, by canals and railroads, during the years 1848 to 1851, inclusive, and fully sustains the views expressed in the foregoing pages.

The following is a classified statement of the freighting business done on the New York Central and the New York and Erie Railroads, for the

* The average capacity of a freight car designed for carrying eight tons, is 259.75 cubic feet per ton, and of the present largest class canal boats, intending to carry ninety tons, is 59.6 cubic feet per ton, and for boats on the enlarged canal, is 82.4 cubic feet per ton.

months of August and September, 1853. The reports of the several companies consolidated under the name of the New York Central do not furnish the means of extending the comparison for the whole year:—

	New York and Erie.	New York and Central.
	Tons.	Tons.
The product of the forest,	25,559	2,438
The product of animals,	19,632	25,728
Vegetable food,	14,001	18,587
Other agricultural products,	1,701	3,464
Manufactures,	14,746	6,285
Merchandise,	12,656	12,846
Other articles, miscellaneous,	36,059†	3,846
Total tons,	124,854	73,140
Equivalent tons moved one mile,	19,202,049	10,861,290
Average movement of each ton, miles,	154	148
Whole length of road, miles,	446	300

The above table exhibits the cause of the reduced average rate of charges for transportation on the New York and Erie below that of the Central, in the fact of the former road carrying so large a proportion of the product of the forest and mines, necessarily at a low rate, and thus reducing the average.

Thus it appears that all of the heavy articles and those not requiring a speedy transit, were carried on the canal, when a choice between the two was afforded; that these articles were carried to the canal by the railroads when it was accessible, and that they were only carried on the railroads from districts inaccessible to the canals, and then frequently at rates so near the cost of transport as to afford but little or no profit to the railroad company.

The tables accompanying the last annual Report furnish the means of ascertaining the proportions of local freight and its character, carried by the three trunk lines of railroads in this State in 1852.

	Whole.	Local.	Through.
Northern Railroad,...	181,806	67,646	114,160
New York Central,...	311,000	279,713	81,287
New York and Erie,...	456,462	409,615	46,841

Total of Cent'l & Erie, 767,462 689,328 46,841

The local freight which was carried on the Central and Erie Railroads in 1852, was 90 per cent. of the whole tonnage.

The returns of the Erie and Central Railroads for 1853, show the following result:

	Whole.	Local.	Through.
New York Central,...	360,000	284,950	75,050
New York & Erie,...	630,039	554,934	75,005

The local tonnage of the above roads is thus shown to be 85 per cent. of the whole.

The local freight on the Northern road was but thirty per cent. of the whole tonnage.

The character of the local and through freight on the Northern road is essentially different from that on the Central and on the Erie. The products of the forest were wholly local. The products of animals was one-third local. Agricultural products and merchandise were nearly all through. Manufactures and other articles were about equally divided between local and through.

This road connects with the network of the New England roads at Lake Champlain, and as there is a large deficiency of agricultural products in the interior of that district for home consumption, she receives her imports of such articles chiefly through the Northern Railroad, which accounts for the large through transportation of those articles over that road.

On the New York and Erie Railroad the products of the forest, and manufactures, and miscellaneous articles were almost wholly local. The products

* Chiefly Coal.

of agriculture and of animals, were four-fifths local, and merchandise was nearly three-fourths local.

VI. ANALYSIS OF THE PRESENT BUSINESS OF THE CANALS.

The annexed table D, furnishes a comparative statement of the tonnage and tolls of all and each of the canals, of that arriving and that leaving tide-water, of the tonnage shipped from the western termini; of that from this and the western states, the tonnage and tolls of the several classes, and of some of the principal articles of each class transported.

This table has been made by taking the tonnage and tolls of all the canals as a standard, and stating the proportions which each of the canals, shipments, classes, and articles named bear to the amount of all the canals. A glance at the tables, as thus arranged, is sufficient to furnish the reader with a tolerably correct idea of the relative business done upon each canal, at the chief localities, and in the transportation of each of the classes and articles carried.

The following deductions from these tables will serve to present some of the more striking points in the business performed:

First—That while the tonnage upon the Erie canal is but little more than one-half of the total tonnage of the canals, the receipts for tolls are three-fourths of the whole receipts.

Second—That while the tonnage of the Oswego and Champlain canals forms nearly one-third of the whole tonnage, the receipts for tolls on both are sixteen per cent. of the whole; and while that of the Chemung, Genesee Valley and Cayuga canals forms one-ninth of the whole tonnage, the receipts for tolls on them are eight per cent of the whole.

Third—That the tonnage arriving at tide-water is nearly three-fifths of the whole; that leaving tide-water is about one-seventh; and that shipped elsewhere is about three-tenths of the whole tonnage.

Fourth—That the tonnage shipped at Lake Erie is nearly one-fifth, at Oswego nearly one-eighth, and at Whitehall one-twelfth of the whole tonnage.

Fifth—That the tonnage from the western states forms one-third, and that from this state two-thirds of the whole tonnage carried.

In this classification of the articles transported the following deductions are made from the table:—

First—That the tonnage of the products of the forest is four-tenths; of vegetable food one-fourth; of merchandise and other articles each one-eighth; while the receipts for tolls from the first are but one-fifth, from the second four-tenths, from the third nearly one-fourth, and from the fourth but one-twenty-fifth of the whole.

The tonnage of manufactures being five per cent and the tolls four per cent, and the tonnage and tolls of the products of animals being each but two per cent of the whole.

Second—That the tonnage of lumber is about one-fourth of the whole, and the receipts for tolls one-eighth; that the receipts for flour, wheat, and corn is about one-fourth, while the tolls are over one-third.

Third—That timber, salt and railroad iron form each four per cent of the tonnage, while the tolls of the two former are two, and of the latter one per cent of the whole.

The foregoing statements and deductions, have been made from the report of tolls, trade and tonnage as prepared by the Auditor.

The tonnage and tolls due to the movement on each of the canals cannot be ascertained from these reports, as they only show the tonnage cleared at each collector's office, and the whole tolls collected thereon, whether the articles are conveyed on one or more of the canals.

Thus the tonnage of lumber shipped at Buffalo in 1852 was 81,102 tons, and the tolls collected thereon were \$59,844. If this was all white pine, carried on boats, the amount of the tolls shows that it had a total movement nearly equal to that

of one ton moved twenty millions of miles, or nearly equal to an average movement of 56,000 tons from Buffalo to tide-water.

The tonnage of lumber shipped at Oswego is 147,086 tons, and the tolls collected thereon were \$64,800, which shows a total movement equal to that of one ton moved over twenty-one millions of miles, which for the length of that canal (38 miles) would be equal to an average movement of nearly 570,000 tons from Oswego to Syracuse, which is absurd, and should be 106,000 tons to tide-water. Three-fourths of the movement of this tonnage, and of the tolls, is therefore evidently due to the Erie canal, and one-fourth only to the Oswego.

The tonnage and tolls on up freight, on the other hand, are credited in these reports from the Auditor to the Erie Canal, when a portion of the movement and of the tolls is due to the lateral canals.

The up tonnage being less than one-fourth of the down, renders the tables given by the Auditor unfavorable to the tonnage of the Erie canal.

The annexed table (E) has been prepared from the reports of the business done in 1851 and 1852, and shows the tonnage, tolls, and total movement of each article and class of freight on all the canals.

The report of the Auditor, as before stated, does not furnish the means of showing a similar statement for each of the canals. The whole movement in 1853 was equal to seven hundred millions of tons moved one mile, or an average movement of one hundred and sixty-five miles for each ton.

The average movement of the tonnage on the Erie Canal, excluding that of the lateral canals, is probably nearly 300 miles for each ton.

The comparative movement of each class, compared with the whole movement, was as follows:

Products of the forest, 34 per cent; agricultural products, 37 per cent; merchandise, 16 per cent; manufactures, 5 per cent; miscellaneous articles, 8 per cent.

The comparative movement of some of the principal articles embraced in these classes, is as follows:

First—Of the forest. Boards and scantling, 24 per cent of the whole movement of all articles on all the canals; staves, 5 per cent; timber, 5 per cent.

Second—Of the products of animals. Pork, 1 per cent; beef, 6-10 of one per cent; butter, cheese, and hides, each 1-10 per cent of the whole amount.

Third—Of vegetable food. Flour, 14 per cent; wheat, 11 per cent; corn, 15 per cent; and barley, 2 per cent.

Fourth—Of manufactures. Salt, 2 per cent; pig-iron and domestic spirits, each 8-10 of one per cent; castings, 6-10; bloom iron, furniture, and leather, each 1-10 of one per cent of the whole movement.

Fifth—Merchandise, 10½ per cent, and railroad iron, 6 per cent of the whole.

Unclassified articles. Coal, 4 per cent; stone, lime, and clay, 2 per cent; and live cattle, sheep, and hogs, 5-1000 of one per cent of the whole movement.

By reference to the tonnage tables, given by the Auditor, it will be seen how widely the proportions given by them differ from those now presented, of the total movements of these classes.

To be continued.

Panama Railroad.

At the late annual meeting of the Panama Railroad Company for the election of Directors, the following gentlemen were made members of the Board for the ensuing year:—

Messrs. David Hoadley, W. H. Aspinwall, H. Chauncey, E. Bartlett, C. W. Lawrence, T. W. Ludlow, E. J. Woolsey, G. Kemble, J. B. Varnum, G. B. Lamar, H. A. Coit, W. Whitewright, Jr., and S. W. Comstock.

Railroad and Steamboat Accidents.

The following are the number of railroad and steamboat accidents, with the number of killed and wounded in each month, which have occurred in the United States from the 1st of January, 1853, to the present time. Only those accidents are enumerated which have been attended with loss of life and jury to persons:—

	Railroads.			Steamboats.		
	Accidents.	Killed.	Wounded.	Accidents.	Killed.	Wounded.
January.....	12	25	40	4	66	33
February.....	6	6	11	1	120	—
March.....	14	24	57	3	30	17
April.....	4	25	54	3	58	21
May.....	8	64	48	—	—	—
June.....	5	5	19	4	19	17
July.....	11	8	22	1	7	2
August.....	14	35	94	2	2	5
September.....	18	13	35	3	8	14
October.....	19	14	34	4	18	23
November.....	12	11	32	3	18	10
December.....	8	7	37	3	13	16
Total in 1853.....	138	227	483	31	359	158
1854.						
January.....	21	10	26	8	139	20
February.....	20	12	37	5	54	24
March.....	11	13	78	4	148	23
Total, 14½ months..	190	262	624	48	691	225

North Missouri Railroad.

The following gentlemen have been elected Directors of the North Missouri Railroad for the current year: Col. John O'Fallon, Thos. T. January, James T. Sweringen, Gerard B. Allen, A. Krekel, Calvin Case, Lewis Bissell, John D. Coalter, Robert M. Renick, John Hartnett, Andrew Harper, Carlos S. Greeley, Isaac A. Sturgeon.

Maryland.

BOARD OF PUBLIC WORKS.

The Commissioners of Public Works of the State of Maryland met at noon yesterday at Barnum's Hotel, in this city, when the following gentlemen were present: Moor N. Galls, Charles R. Stewart, Dr. Nelson, and Samuel Chamberlain.

The Board organized by electing Charles R. Stewart President, and then proceeded to nominate and elect Directors on the part of the State in the several Railroad Companies, in which the State holds an interest, with the following result:

Baltimore and Susquehanna Railroad.—Samuel H. Taggart, Zenus Barnum, John P. Kennedy, Nicholas H. Nelson, and Wm. Hutchins.

Baltimore and Ohio Railroad.—George Brown, Wm. Price, Dr. Howard Kennedy, Lawrence J. Brengle, Isaac C. Anderson, John Johnson, Henry A. Thompson, John S. Gittings, George Vickers, and Joseph S. Cleaveland.

Annapolis and Elk Ridge Railroad.—Tho's G. Pratt, Benjamin E. Gantt, and Robert Lemon.

The Board then adjourned.

LOCOMOTIVE ENGINES.

A. & W. Denmead & Son,
BALTIMORE, MD.

HAVING THEIR IRON FOUNDRY & MACHINE SHOP in complete operation, are prepared to execute, faithfully and promptly, orders for

Locomotive or Stationary Steam Engines,
Woolen, Cotton, Flour, Rice, Sugar, Grist or Saw Mills,
Machinery for cutting all kinds of Gearing,
Hydraulic, Tobacco, and other Presses,
Car and Locomotive patent Ring-Wheels, warranted,
Bridge and Mill Castings, of every description,
Gas and Water Pipes, all sizes, warranted,
Railroad Wheels, with best figured axle, furnished and fitted up for use, complete.

Estimates for Work, in any part of the United States, furnished at short notice.
sp.14-15

For Sale.

THE ROSSIE FURNACE AND FOUNDRY, etc., St. Lawrence County, N. Y.—This well known establishment, having attached to it a large and complete Casting House and Machine Shop, with ample accommodations for workmen, and every convenience necessary to the prosecution of an extensive business, together with valuable Iron Mines and Mining Rights, also Timber Lands, is offered for sale by the proprietor, who retires from the business. The capacity of the Rossie Furnace for making iron, is believed to be unsurpassed by any charcoal Furnace in the country, having repeatedly run up to fourteen tons per day, with 65 to 60 per cent. yield from ores—specular red oxides—coal, per ton, 100 bushels. The same has been in uninterrupted operation for over twenty years, and the reputation of its iron is established throughout the West. The location of these works is in the village and town of Rossie, county of St. Lawrence, N. Y., six miles from the River St. Lawrence, and connected therewith by a plank road. Their cost, apart from premises and water power, has involved an expenditure of over \$100,000, and their present efficiency, in every respect, is considered unexceptionable. For further information apply to D. W. Baldwin, Agent, at the works, or to the undersigned.

Ogdensburgh, N. Y., April, 1853.

G. PARISH.

15,3m*

Cast Iron Chilled Slip Tires for Engine Driving Wheels.

THE undersigned, principal Agent for the above improvement, offers it, with the right of use, to Railroad Companies and others. The cost of these Tires is less than one-third that of wrought iron, the cost of renewing one-quarter; and the adhesion, strength, and durability equally as great, as will be proved to the satisfaction of any party. Over two hundred locomotives of the heaviest class, (25 to 30 tons,) upon the Baltimore and Ohio Road, are shod with cast iron, with an acknowledged saving over wrought iron equal to \$30,000 per annum. Address
15,1f. ZERAH COLBURN, Paterson, N. J.

Chambers' Wrought Iron Car Wheels and Axles.

THE advantages of these wheels, in connection with their comparative cheapness, are their strength, lightness, and durability, being wholly of wrought iron, and the set of four wheels and two axles weighing only about one ton. They are now used on the London and Northwestern and other principal lines of English Railways, carrying greater weights than other wheels, say 12 to 15 tons, and in no instance has one given way. Samples, testimonials, &c. may be seen on application to the manufacturer's agents,

NAYLOR & CO.,
90 & 101 John street.

New York, 12th April, 1854.

Notice to Contractors.

**Office of the Milwaukee and Horicon R. R. Co. }
Milwaukee, Wis., March 15th, 1854.**

PROPOSALS will be received at this office till the first day of May next for the construction of the second division of the Milwaukee and Horicon Railroad, from Horicon to Berlin a distance of forty-two miles or sections thereof.

Maps, profiles and specifications will be ready for the examination of bidders on and after the tenth day of April next.

JOHN B. SMITH,
Pres't M. & H. R. R. Co.

Railroad Car Works.

THE undersigned are prepared to manufacture for Railroad Companies, Passenger, Baggage, Cattle, Freight, Gravel and Hand Cars, also Baggage Barrows and Freight Trucks.

F. HUNGERFORD & CO.
Mayville, Ky., Sept. 29, 1853.

Notice to Capitalists.

THE GREENVILLE AND COLUMBIA RAILROAD COMPANY

Now offers for sale their Coupon Bonds, redeemable in ten years, bearing interest at seven per cent, per annum, payable semi-annually, secured by mortgage of the entire Road, being the first lien upon it.

For a full understanding of the purposes, value of the property, and prospects of the Company, the following statement is made. It is proposed to issue Coupon Bonds, to the amount of three hundred thousand dollars which with those already issued will make the Bound debt \$800,000. The mortgage of the Road bearing date the eighteenth instant, is to cover these Bonds, as well those issued, as those to be issued, to the amount of \$800,000, and no more.

The Road was finished on the 9th December last, is well equipped, and in full and successful operation. The entire length of the Road, including its Branches, is 164 miles, and cost as follows

Surveying and Engineering,.....	\$ 66,881 34	
Right of way.....	10,441 89	
Graduation.....	474,787 69	
Masonry.....	323,500 00	
Trestle Bridging.....	88,351 69	
Broad River Bridge,...	37,571 33	
Saluda Lower Bridge,...	6,580 78	
Saluda Upper Bridge,...	8,416 48	
Timber for Tracks,...	158,181 23	
Iron Rails,.....	575,285 59	
Spikes and Chairs,...	50,891 80	
Superstructure and Track Laying,....	94,921 42	\$1,604,580 74
Real Estate,.....	\$ 22,754 90	
Depots and Water Stations,.....	44,745 52	
Workshop Building,...	17,125 54	
Machinery for Workshop,.....	16,702 19	101,328 15
Locomotive Engines,...	\$119,176 48	
Passenger and Freight Cars,.....	180,000 00	249,176 48
		\$1,955,065 37
Accounts for Materials, Work, &c., entering into construction, not yet fully ascertained, but supposed to be about,.....		100,000 00
		2,055,065 37
Capital Stock paid in,...	\$1,100,029 49	
Assessment on Stock paid in,.....	131,937 26	
		\$1,231,966 75

The Earnings of the Road for the last three months in an unfinished condition were as follows:

October—From Freight,...	\$12,761 13	
From Passengers,...	8,321 17	
From Mail,.....	700 00	\$21,782 30
November—From Freight,...	\$ 9,764 41	
From Passengers,...	8,408 35	
From Mail,...	800 00	\$18,967 76
December—From Freight,...	\$12,205 26	
From Passengers,...	9,084 00	
From Mail,....	900 00	\$22,189 26

For three Months,..... \$62,889 32

The whole expenses of the Road, it is believed, will not exceed \$11,000 per month, or 50 per cent, on the earnings. The Road, for the greater part, is well constructed—of good material and heavy iron, and could not now be made and furnished as it is for less than \$3,000,000.

By order of the Directors,
THOMAS C. PERRIN, President.

January 18th, 1854.

N. B. The Bonds can be had by applying to Mr. Jacob Cohen, of Charleston; Mr. J. P. Southern, of Columbia, or to me at Abbeville Court House. Bids for these Bonds are requested.

Railroad Iron.

1,300 TONS superior quality Yorkshire rails 56 pound-T pattern can be immediately delivered at New York, Savannah, or New Orleans.

For sale by

NAYLOR & CO.

New York, April 1st, 1854.

Brass Tubes for Locomotive and Marine Boilers.

THE undersigned having been appointed Agent for the high respectable manufacturers Messrs. Allen, Everitt & Son of Birmingham, is prepared to take orders, at fixed prices, for Brass Tubes of all diameters, for Engines.—For further particulars and inspection of patterns, please apply to
JOHN H. HICKS,
90 Beaver str.

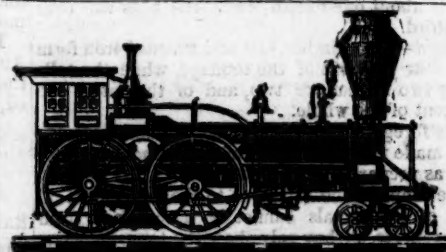
March 1854.

Notice to Contractors.

Proposals will be received for all the heavy work on the Blue Ridge Rail Road, South Carolina; Blue Ridge Rail Road, Georgia; Tennessee River Rail Road, North Carolina; Knoxville and Charleston Rail Road Tennessee. The above lines of rail-way are consolidated and under the management of one Company, Extending from Anderson South Carolina, via Clayton, Georgia, Franklin North Carolina, to Knoxville Tennessee, a distance of 194 miles. That part of the road from Anderson South Carolina, to the Turniptop Mountain, a distance of 40 miles is principally earth excavation, of about equal quantities of cut and fill, with several bridges. From the Turniptop Mountain to the Rabun Gap, a distance of 24 miles, the work is very heavy, there being on the line one tunnel of 5800 feet, one of 1400 feet, and one of 400 feet in length; a suspension bridge across the Chatuga River 500 feet long, with some very heavy earth and rock cuts. The rock in the Tunnels is gneiss stratified. From the Rabun Gap to twenty miles below Franklin, a distance of 50 miles, the line follows down the Tennessee River; the class of work is principally side hill excavation, some of which is rock; their will also be several bridges. From the point 20 miles below Franklin to Hardens, a distance of 35 miles, the line follows the Tennessee River the entire distance, causing heavy side rock excavations. On this portion of the line will be several expensive bridges, and a tunnel of about 1000 feet. From Hardens to Knoxville, a distance of 45 miles, the line follows the river about eight miles, then leaves it, running across the Chilhow mountains almost a north line to Knoxville; this portion of the road is heavy work, with about equal quantities of cut and fill, an expensive bridge 1000 feet long and 45 feet high, crossing the Holston River at Knoxville. The character of the rock from Knoxville to Hardens is limestone, and from Hardens to Franklin gneiss rock stratified, and from Franklin to Anderson, stratified sand stone and gneiss rock. The character of the earth is sandy and clay loam. The line for the whole distance runs through high table lands, well settled, remarkable for its health, good water and ample resources for subsistence. The above line of rail-way offers great inducements to experienced contractors. The undersigned will be prepared to receive proposals and enter into contracts for the graduation, bridging, tunneling and masonry for the heavy portion of the line, from and after the 1st day of May next, at Knoxville Tennessee, Franklin North Carolina, and Pendleton South Carolina, and will continue at such places, until the same is under contract. Profiles and maps of approximate location can be seen at each of the above places after the 1st day of May. Proposals are asked with cash payments, also eighty per cent cash and twenty per cent in the Capital Stocks or Bonds of the Company. All communications prior to may 1st must be addressed at Pendleton South Carolina.

4,13

ANSON BANGS & Co.

**ZERAH COLBURN,**

CIVIL AND MECHANICAL ENGINEER.

OFFERS his services to Railroad Companies and others, in designing and constructing Locomotive Engines of superior adaptation and efficiency. Refers to CHAS. MIMOT, Supt. N. Y. and Erie Railroad; WM. RAYMOND LEE, Pres't, Ogdensburg railroad; G. W. WHISTLER, Esq., Vice Pres't, New Haven railroad; ROGERS, KETCHUM & GROSVENOR, Paterson, N. J.; O. M. HYDE, Esq., Detroit.

M. W. BALDWIN & CO., Engineers,

Broad and Hamilton streets, Philadelphia,
WOULD call the attention of Railroad Managers, and those interested in Railroad Property, to their **SYSTEM OF LOCOMOTIVE ENGINES** in which they are adapted to the particular business for which they may be required; by the use of one, two, three or four pair of driving wheels; and the use of the whole, or so much of the weight as may be desirable for adhesion; and in accommodating them to the grades, curves, strength of superstructure and rail and work to be done.—By these means the maximum useful effect of the power is secured with the least expense for attendance, cost of fuel and repairs to Road and Engine. With these objects in view and as the result of twenty-three years practical experience in the business by our senior Partner we manufacture **Five different kinds of Engines** and several classes or sizes of each kind.

Particular attention paid to the strength of the machine in the plan and workmanship of all the details. Our long experience and opportunities of obtaining information, enables us to offer these engines with the assurance that in efficiency, economy and durability they will compare favorably with those of any other kind in use.

We also furnish to order, Wheels, Axles, Bowling Tire (to fit centres without boring), Composition Castings for Bearings; every description of Copper Sheet Iron and Boiler work; and every article appertaining to the repair or renewal of Locomotive Engines.

M. W. BALDWIN.

MATTHEW BAIRD.

C. Floyd-Jones.,

Division Engineer 3d and 12th Divisions.
 ILLINOIS CENTRAL RAILROAD.
 Vandalia, Ill.

**Boiler and Tank Rivets,
Nuts and Washers;**

All Sizes of
Bolts and Bolt Ends

for Sale by
BRIDGES & BROTHER,
 64 Courtland st., N. Y.

New York and Erie R. R.

PASSENGER TRAINS
 leave Pier foot of Duane street,
 as follows, viz:—

BUFFALO EXPRESS, at 7 a. m. for Buffalo direct, over the N. Y. & E. R. R., and the B. & N. Y. City R. R., without change of baggage or cars.

MAIL, at 8½ a. m. for Dunkirk and Buffalo, and intermediate stations. This train remains over night at Elmira, and proceeds the next morning.

WAY EXPRESS, at 12½ p. m. for Dunkirk, and intermediate stations.

ACCOMMODATION, at 3 p. m. for Delaware and intermediate stations.

NEWBURG EXPRESS, at 4 p. m., for Newburg.

WAY PASSENGER, at 4 p. m., for Piermont and intermediate stations.

NIGHT EXPRESS, at 5 p. m. for Dunkirk and Buffalo.

On Sundays only one Express Train—at 5 p. m.

These Express Trains connect at Dunkirk with the Lake Shore Railroad for Cleveland, Cincinnati, Toledo, Detroit, Chicago, etc.

CHAS. MINOT, Supt.

Railroad Iron.

2000 TONS Railroad Iron, weighing about 55 lbs. per yard, "Erie" pattern of G. L. and Crawshaw's manufacture, now on the way from the shipping ports in Great Britain to this port, for sale by
P. CROUTEAU, Jr., SANFORD & CO.,
 December 4, 1852. No. 51 New street.

Travelling Agent Wanted.

A PERSON is wanted to travel throughout the United States, as Agent for one of the most respectable manufacturing establishments in this country. He must be a man of easy, good address, industry, perseverance, cheerful temperament, a competent salesman, possessing a practical knowledge of machinery, iron and steel, and able to produce the best testimonials as to integrity and general good character. One who has acted in the capacity of master mechanic and superintendent of a railroad machine shop would be preferred. Permanent employ and liberal compensation will be given. It will be a needless waste of time for any one to apply who is not fully qualified to suit the wants stated. He is not wanted to learn, but must have already learned to act his part. Address **EDART NORI**, Post Office, New York. apl2-3t*

To Civil Engineers and Surveyors.

TRANSITS, Level and Surveyors Compasses Manufactured on the most improved principle and of the Best Quality
 by **THOMAS HUNT,**
 No. 63 Fulton Street,
 New York.

1y10*

Passenger Cars for Sale.

TWO first class Passenger Cars, built by one of the best car builders in the country, for the Baltimore and Ohio Railroad.

The above presents a rare opportunity to any Railroad Company wishing first class cars for immediate use.

They will be sold at a bargain for cash or good paper. Enquire at the office of Bridges & Brothers, 64 Courtland Street.

New York, Feb. 21st, 1854.

Railroad Iron.

THE Subscribers are at all times prepared to enter into contracts for Railroad Iron, of Messrs. Guest & Co., or other leading manufacturers' make, delivered free on board vessels in England or in this country.

BOORMAN, JOHNSTON & CO.,
 90 Broadway, New York.

Sept. 7.

MANUFACTURERS' AGENCY

FOR

RAILROAD FURNISHING,

Office 18 Dearborn St., Chicago, Ill.

E. R. T. ARMSTRONG, Agent,

KEEPS constantly on hand Railroad Spikes, Burden's make, Railroad Wrought Iron Chairs, superior quality, Ames' manufacture of Locomotive Tires, Cranks, &c. Washburn, Pond & Co.'s Car Wheels, of best Salisbury and Stirling Iron, mixed under direction of Mr. Washburn, and warranted.

Orders invited for Locomotive and Car Rolled or Hammered Axles—Locomotive Lamps—Superior Pumps, for Stations, Switch Stands, Levers, and Targets—Locomotive Drivers and Cylinders—Boxes and Pedestals—Screw Cutters and Drilling Machines—Frog's Heads and Heel Blocks—Screw Presses, for forcing Wheels and Axles.

Oils of a superior quality, made expressly for railroads, and free from gums.

Refer to—Illinois Central railroad, Ohio and Mississippi river railroad, Michigan Southern railroad, Galena and Chicago Union railroad, Milwaukee and Mississippi river railroad, Little Miami railroad, Cincinnati, Hamilton and Dayton railroad, Central Ohio railroad.

14.6mo's.

S. SEYMOUR & O. GENERAL RAILROAD AGENCY, Office, Metropolitan Bank Building, No 110 Broadway, have to dispose of at private sale, in amounts to suit persons desiring to invest, the following valuable Securities:

LOUISVILLE CITY BONDS, at 30 years
OHIO AND MISSISSIPPI R.R. STOCK, drawing interest.

MAYSVILLE AND LEXINGTON MORTGAGE BONDS, at 24 years.

MAYSVILLE AND LEXINGTON R. R. STOCK.

SCIOTO AND HOCKING VALLEY R. R. STOCK.

SCIOTO AND HOCKING VALLEY R. R. FIRST

MORTGAGE CONVERTIBLE BONDS, at 11 years.

LOUISVILLE AND NASHVILLE R. R. STOCK.

BUFFALO AND STATE LINE R. R. BONDS.

They are prepared to negotiate contracts for the construction and equipment of Railroads in any part of the country, including furnishing corps of engineers and contractors locomotive engines and cars, railroad bridges. McCallum's patent, railroad iron, chairs, spikes, switch irons, &c., &c.

Notice to Contractors.

PACIFIC RAILROAD OF MISSOURI.

SEALED proposals will be received by the undersigned, at their office in the city of St. Louis, until six o'clock, p. m., of the 15th day of May next, for the Grading, Masonry, etc., of the first division of the South-west Branch of the Pacific Railroad, extending from Franklin Depot, the present terminus of the road, some 40 miles West of St. Louis, to the crossing of the Gasconade River, a distance of about 78 miles. The line will be divided into sections of about one mile each, and proposals may be made for one or more sections. The line, plans, profiles, specifications, form of contract, etc., will be ready for inspection on and after the first day of May next. The work to be let is quite heavy, situated in a healthy country, and is easy of access.

The undersigned reserve to themselves to reject all proposals that are not satisfactory.

A. S. DIVEN & CO.

March 24th, 1854.

Railroad Companies and Contractors,

WANTING first rate German or Irish laborers for railroads and canal work, or mechanics of any kind, will find the undersigned a first rate office to give their orders to, as thousands of emigrants apply to them every season for employment.

Satisfactory reference will be given to well known companies and contractors, and men are forwarded to any part of the Union.

MORRIS & COHNERT,

European, American Employment Office,
 287 Broadway, corner Reade-st.
 3m*10 Under the Irving House, New York.

THE

New Yorker Handels-Zeitung

A GERMAN Commercial Paper, containing Prices Current, Market Reports, Exchange and Stock Rates, Shipping List and Correspondences from all parts of the world, appears twice a week in two separate editions, viz: one for home circulation, published each Wednesday and Saturday morning; the other for circulation in Europe,—the only German Paper published in the United States admitted to the German States—appears before the departure of each mail steamer for Europe. Terms—The paper, per annum, at New York, \$5, for Germany, full Postage included, \$11, and for all other parts of Europe, the U. S. Postage inclua., \$3. Advertisements taken at liberal terms.

Howland, Burgess & Smith,

MANUFACTURERS OF PURE SPERM OIL for Railroad Engines and Lamps, of Refined Whale Oil now so generally used for car wheels.—Works, New Bedford Mass.—Store, Albany, N. Y.

Orders (directed to either place) respectfully solicited from Superintendents.—All Oil warranted pure and perfectly satisfactory.

Pneumatic Pile Driving.

FOUNDATIONS FOR BRIDGES, PIERS & C.

BY THE PNEUMATIC process hollow cylindrical piles or tubes from eight inches to ten feet diameter can be driven through sand, mud, clay or other material to any required depth. The complete success which has attended the operations of this process shows it to be eminently practicable in, and much the best method known for, the construction of railroad bridges across deep and rapid rivers where permanent foundations of great strength are necessary, and have to be secured at great depth.

Applications for license for the use of the invention in any part of the United States may be made to H. V. POOR, Esq., Editor of the *American Railroad Journal*, 9 Spruce street; or for contracts for pile driving, or licenses as above to

CHARLES PONTEZ,

March 25th, 1854.

New York.

To Contractors.**PACIFIC RAILROAD OF MISSOURI**

THIRD AND FOURTH DIVISIONS.

IT is intended to make contract for the third divisions of this road, (extending from the Missouri river at Jefferson City, passing near Georgetown and Warrensburg, to the Missouri river near Independence, about 180 miles,) so soon after the first of May next, as satisfactory proposals shall be made.

Contract will be made for the whole now offered, or such parts as particular contractors may select in form and quantity to suit the interests of the company. Proposals are asked for by the cubic yard, with cash payments; but contractors may, if they desire, accompany their offer with proposals for two thirds cash and one third in county and railroad mortgage bonds or other securities.

Profiles and maps of approximate location can be seen after first of April next at Pacific Railroad Office, in St. Louis, and any information will be given on application to the Engineer.

The first division of this road is now in operation; the second division to Jefferson City under present course of construction.

The third and fourth divisions now offered pass over a high, rolling mixed prairie and timbered country, and for healthfulness and supply of provisions will compare favorably with any part of the west.

THOS. ALLEN, Pres.

THOS. S. O'SULLIVAN, Chief Eng.

Pacific R.R. Office, St. Louis, Feb. 1854.

Railroad Iron.

1250 Tons Erie Pattern Guest and Co's make, weighing 57 1/2 lbs. per yard, to be shipped from Wales in July and August, for this port—for sale by
BOORMAN, JOHNSTON & CO.,
 60 Broadway, New York.
 June 2, 1853.

Railroad Iron.

THE "Montour Iron Company" is prepared to execute orders for Rails of the usual patterns and weights, and of any required length not exceeding 30 feet per rail. Apply to
THOS. CHAMBERS, President,
 September, 1850.

Railroad Iron.

THE Undersigned, Agents for the Manufacturers, are prepared to contract to deliver free on board at shipping ports in England, or at ports of discharge in the United States, Rails of superior quality, and of such weight or pattern as may be required.
VOSE, PERKINS & CO.,
 9 South William St.
 New York, June 1, 1851.

Knox & Shain,

MANUFACTURERS OF
LEVELS, TRANSITS AND SURVEYING COMPASSES.

No 72 Dock st. first door south of Walnut, west side
PHILADELPHIA.
 First Premium awarded by the Franklin Institute.

Stuart, Serrell & Co.,

CIVIL ENGINEERS,

Rooms 22, 24, 26 & 27,
 157 Broadway, New York.

CHARLES B. STUART,
 DANIEL MARSH,

EDWARD W. SERRELL,
 SAMUEL McELROY.

Important to Railway Co's.

A GREAT improvement has recently been perfected in the manufacture of Dumping Gravel Cars by which the cost is materially lessened and the strength and durability much increased.

We have secured the right to manufacture these improved Cars and can supply them at prices ten per cent. lower than the ordinary kind.

Orders directed to the Hamilton Car Co., Hamilton, Ohio, will receive prompt attention.

**South-Western Car Shops,
Madison, Indiana.**

THE subscriber is prepared to execute orders at short notice, for all kinds of Passenger, Freight and other descriptions of Railroad Cars.

Work delivered at any point accessible by railroad, or by the Ohio and Mississippi rivers.

Facilities for transportation, enable the subscriber to afford peculiar advantages to Companies requiring work delivered in the South and West.
W. CLOUGH.

Refer to

JNO. BROUGH, Esq. WINSLOW, LANIER & Co.
 feb. 18. 1m.

**Ontario, Simcoe & Huron R.R.
CANADA.**

THIS road opened in May last to Lake Simcoe is expected to be completed to the Georgian Bay, Lake Huron a distance of 96 miles in June next where it will form the shortest and most agreeable route to the North Western States to Lake Michigan and to the Mineral Regions of Lake Superior.

At present the Passenger Trains leave Toronto for Barrie (64 miles) daily at 8 a.m. and 3.30 p.m., returning the same day—On the opening of the navigation a Steamer will ply on Lake Simcoe in connection with the Trains and will convey passengers through that Lake and Lake Couchiching to Orillia whence a short portage of eighteen miles will take them to the waters of Lake Huron to the Steamer (Kaiakooah) which runs to the Sault St. Marie and intermediate ports forming the most expeditious and agreeable route to the Mineral Regions of Lakes Huron and Superior.

Arrangements will be made on the completion of the road to the Georgian Bay for a line of first class Steamers to extend their trips to the ports on Lake Michigan.

ALFRED BRUNEL,
 Superintendent.

Railroad Iron Via Quebec.

JOHN ANDERSON & CO.
 COMMISSION MERCHANTS,
 SHIPPING AGENTS AND BROKERS,
Quebec and Montreal.

PARTICULAR attention given to the Transhipment of Iron, &c., in Transits for the Western Lake Ports, and to the Shipments of Rails in Great Britain.
 Quebec, Dec. 2, 1853.

To Locomotive Engine Builders and Engineers.

THE Proprietors offer for rent for a term of years, with immediate possession, the splendid property, known as the BELLEVILLE IRON WORKS, situated on the Mississippi, directly opposite the City of New Orleans, and within 800 feet of the River, with which it is connected by fine wharves and landings.

The buildings are of brick, with slated roofs, and were erected in 1848 at a very heavy expense; are of a most substantial and durable character and admirably fitted for a Foundry and Machine Shops, or almost any mechanical business. They now contain a new and powerful Engine and Boiler and sufficient machinery, say, planing machines—lathes—boring machines, blacksmith's tools, &c., &c., to employ 100 mechanics, and could be put in working order in a few days. The Buildings cover a lot 300 feet square and are amply large to receive the necessary machinery for the use of 800 to 1000 workmen.

The terminus and depot of the New Orleans, Opelousas and Great Western Railroad is situated about 300 yards from the above property, which could be availed of to great advantage for the manufacture of Locomotives and Railroad work, generally as well as Steam Engines, Sugar Mills, and other descriptions of Machinery.

There are no Shops in New Orleans for the manufacture of Railroad Machinery, and as the Railroad Companies now organized in that city contemplate the construction of over 1000 miles of road,—a large part of which is already under contract,—the property now offered for lease offers a most eligible opportunity for parties desiring to contract to furnish the Engines and Machinery, for those roads. Responsible contractors with their works on the spot would have an advantage over Northern Workshops in contracting for the Work of the Railroads terminating in New Orleans.

The Establishment and prospect of remunerating work to be secured immediately are worthy the attention of manufacturers and Engineers generally.

Applications from responsible parties will be promptly attended to, and to satisfactory parties the proprietors of the Works can offer favorable terms and arrangements.

Letters may be addressed to

R. B. SUMNER,

No. 61 Camp Street,

New Orleans;

and further information may be had by applying to Messrs. BARSTOW & POPE, Pine Street, New York.

Railroad Spikes, Boiler Rivets, etc.

THE Subscribers, Agents for the sale of James S. Spencer's, Jr., Railroad and Boat Spikes, Boiler Rivets, and Wrought Iron Chairs for Railroads, made at his Works near this city, will execute all orders with promptness, despatch, and of the best quality.

ALSO IMPORTERS of English refined and Merchant bar Iron; Extra refined Car and Locomotive Axles (from 3 1/4 to 6 1/2 inches in diameter); B. O. Locomotive Tire (welded by Baldwin). Also, supply Boiler and Flue Iron cut to pattern or otherwise.—Spring, Shear, and Cast Steel, etc., etc., etc.

T. & E. GEORGE.

Philadelphia, November 14, 1850.

Railroad Iron.

THE UNDERSIGNED, HAVING made arrangements abroad, are prepared to contract for the delivery of Foreign rails, of approved brands upon the most favorable terms.

They will also make contracts for American rails, made at their Trenton works, from Andover Iron, in whole or in part, as may be agreed upon.

They are prepared to furnish Telegraph, Spring and Market Wire; Braziers and Wire Rods; Rivets and Merchant Bars to order, all made exclusively from Andover Iron. The attention of parties who require iron of the very best quality for special purposes, is respectfully invited.

COOPER & HEWITT,
 17 Burling Slip, New York.

February 15, 1850.

SHANAHAN & LOEBER,

181 William-st,
 (1st floor—Up Stairs.)
NEW-YORK.

MANUFACTURERS OF
THEODOLITES, TRANSITS, LEVELS,
 Surveyors' Compasses, Drawing Instruments,
 Chains, Scales, Levelling Rods, &c. 1y10

Notice to Contractors.

MEMPHIS & OHIO RAILROAD.

SEALED proposals will be received at the office of the Memphis and Ohio Railroad Company, at Memphis, Tenn., until the 15th day of April next, for the grubbing, clearing, gradation, and masonry of the first 65 miles, from Memphis to Cherryville.

Contractors must give the most undoubted security for the completion of the work at the time, and in the manner specified; and contracts will be let in sections, or for the entire work, as may be deemed best by the Directors.

The Directors reserve the right of rejecting all bids, should none prove satisfactory; and it is desirable that all propositions should be submitted, with the view of preparing the whole work for the iron as soon as possible. Bids of that character and otherwise equally favorable, will have preference.

Maps, plans and specifications may be seen at the office of the company, after the first of April.

E. PEABODY,
 Engineer in charge.

Notice To Contractors.

OFFICE OF THE VICKSBURG, SHREVEPORT AND TEXAS RAIL ROAD COMPANY
 Monroe, La., March 8th, 1854.

SEALED PROPOSALS will be received at this Office until the 1st day of June next, at 2 o'clock P. M., for clearing and grading the section of road between the Mississippi river and Richmond, in the parish of Madison—a distance of about twenty miles; also, for clearing and grading the section between the city of Shreveport and the Texas State line, in the parish of Caddo—a distance of about twenty miles; and, also, for clearing and grading a section of twenty mile, beginning at the Ouachita river and running west, in the parish of Ouachita.

Bids may be made for the entire sections, or any portion thereof, not less than one mile, and those proposing to take stock of the Company in part payment, will be most favorably considered. The lines, plans, profiles and quantities of work, together with the specifications, are now ready for examination in the office of the Company. Payments in the proportion of four-fifths of the amounts due will be made at the end of each month or quarter, as may be agreed on, during the progress of the work.

The company reserves the right to accept such proposals as in their judgment will secure the prompt and faithful execution of the work according to contract; or to reject all if none are satisfactory.

Further information may be obtained from the undersigned.

N. D. COLEMAN,

President.

P. J. TOURNADRE,

Chief Engineer.

7t14

Railroad Iron.

5,000 TONS T RAILS, about one-half weighing 50 lbs. per yard and the remainder 56 lbs. per yard now in bond and for sale by

JOHN H. HICKS,
 21 Feb'y. 1854
 90 Beaver street.

H. SAWYER

(of the late firm of SAWYER & HOBBS),
 Manufacturer of Transits and Levels,

HAS removed to Union Place near Warburton Av., Yonkers, N. Y.